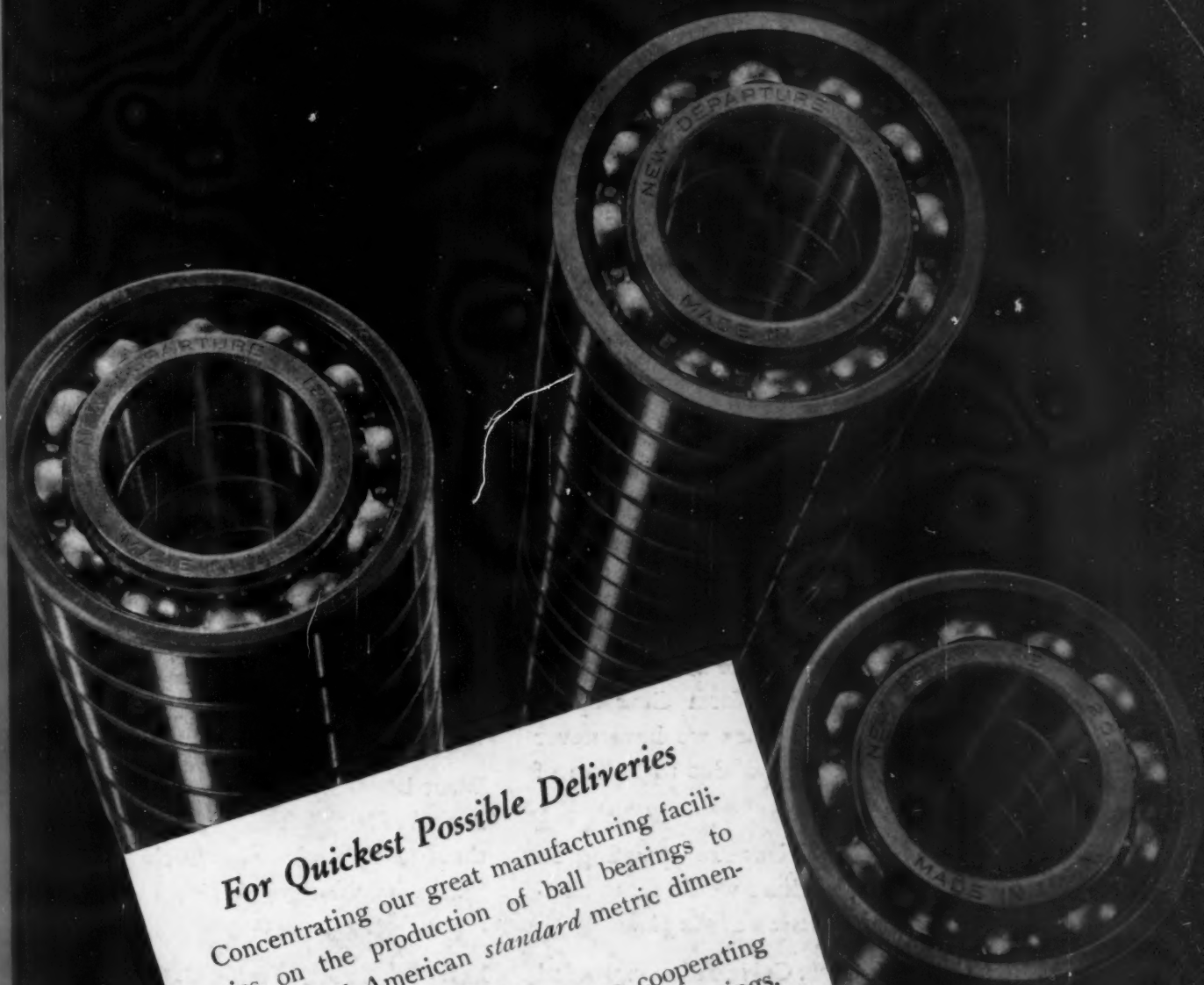


FEBRUARY 12, 1942

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1942-43

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THE IRON AGE

• •
FEBRUARY 12, 1942

• •
ESTABLISHED 1855



The Cook and the Glamor Girl

THIS is not what you might call an "Iron Age Editorial." It is written in behalf of the industrial, technical and business papers of America, sometimes known, in earlier days, as "the trade press."

Most of the industrialists, merchants and other men who have made America what it is, have known and used these publications, either as readers or as advertisers during the entire course of the upbuilding of their businesses. We ourselves could not have remained in business as publishers as long as we have if this were not so. And many of us, like *Railway Age*, *Electrical World*, *American Machinist*, *National Provisioner*, *Steel*, *Engineering News Record*, *Boot and Shoe Recorder* and numerous others, have served our industries for a half century or more.

During all of this time, we have cooked the meals on which our industries have grown and prospered. We have spread their tables with information and ideas; the healthful foods that have made them strong. For their sake, and ours too, we have gone easy on the lady fingers and the pink ice cream. We have lived with our industries, worked with them, fought for them and protected them.

They have always known where we stood and for what we stood.

Well, fellow members of the so-called "trade press", perhaps we are old-fashioned. Perhaps we should have painted our toenails red, perfumed our garments and persons, and have become glamor girls instead of cooks. For "Fortune" says that we are stodgy.

Specifically, in an article describing the American Locomotive Co., "Fortune" in its February issue has this to say:

"Public relations have been streamlined and advertising has been lifted out of the stodgy trade journal rut and keyed to the level of the general periodical. The company is trying to accommodate itself functionally to the future."

So you see, gentlemen of the business, technical and industrial press, we are put down as stodgy. And stodgy, according to the man who had the biggest vocabulary, Noah Webster, means "thick, heavy, stuffed—and dull."

Well, thank Heaven, most of these publications of ours which have served industry long and well are thick and heavy with both editorial and advertising pages, thanks to the appreciation by our customers of our services. But "dull?"

We imagine it might seem dull to a layman, whose bread and butter lies outside of the metal working industry, to read an accurate and highly technical description of the process of steel making. Such a one, while sitting in a dentist's office perhaps, might prefer the more vivid description which was recently printed in "Life" of Jan. 26, 1942. "Life", by the way, is a sister publication of "Fortune," as you probably know. "Here is the graphic description of steel making, a la Life, in the article entitled "Eugene Grace" in that issue. We will bet our bottom dollar that Mr. Grace did not correct the proofs!

(Turn to page 41, please)



“Swing Over” Production is Made Easier with the Help of Inland Metallurgists

In these critical days one manufacturer after another must learn, often from scratch, how to make radically new products, how to operate new equipment, how to adapt old machines to new uses, and how to control new processes. They are in the throes of a “swing over” from peacetime manufacturing to wartime production.

Inland metallurgists are familiar figures in many of these plants, where for years they have been

applying their expert knowledge of putting steel to work for others.

Today, Inland metallurgists are continuing that valuable work. Their technical and practical experience in the selection of steel, in latest fabrication methods, and in speeding up output are helping manufacturers produce for victory.

If you have a problem in the use of steel, call for an Inland metallurgist.

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"On first looking into any steel works, an observer is reminded, inescapably, of Hell. Sparks fly about, devils wearing asbestos hats poke huge fires with red-hot rods and there is a general atmosphere of dirt and danger. This appearance is misleading. Steel working is really a simple procedure which resembles cooking a good dinner. The entire proposition can be described in a nutshell. First some stones and rubble are put into a large \$5,000,000 stove called a blast furnace because air is blown into it to make it burn better. When the contents melt, the purer portion is allowed to ooze out from the bottom. This ooze is pig iron, so called because it is usually kept in pig shaped molds. Before pig iron becomes steel it has to be warmed over and seasoned with various mineral condiments like copper, manganese or what not. This mixing is done in an open-hearth furnace, so called for technical reasons. When the mixture is done, it is dumped out of the furnace, which is really nothing more than an over-sized frying pan, into a new set of molds. After this, various minor machines first reheat and then roll, hammer or draw it into plates, bars or wires."

Nothing stodgy or dull about this description, is there? And what an intriguing idea for our steel metallurgists there is in that new alloying element, the "whatnot". And you can almost hear those cute little pigs squealing! And oh, those minor machines!

And then, in a following paragraph, biographers of Americans will be intrigued to learn that they have been wrong all these years, and that Frederick W. Taylor, father of time study, instead of being, as they have said an American bred and born was a "celebrated English efficiency expert."

Well, to be fair, we must admit that "Fortune", as a rule, has not exercised such a free and vivid disregard for technical accuracy as its sister glamor girl did in this instance. And perhaps that may have been due, in part, to the fact that when the sweet young girl graduates, who apparently write most of the industrial articles in that glamorous publication are stumped, technically, they have brought their problems to the engineers and specialists who edit THE IRON AGE and the other "stodgy" business publications. And out of the kindness of their hearts, these experts have told these children the facts of life, such as the difference between ferrous and non-ferrous metals. But what a reward for such kindness to be labeled "stodgy!"

Well, to come back to the original cause of this little "kidding match", which was the article in "Fortune" about the American Locomotive Co., I cannot help but think of *Railway Age* and its companion publications and how they have fought consistently and ably, year after year, for the railroad industry versus all comers. And that is all right with me, even though some of our own publications which are in the automotive field have fought as vigorously for the interests of the highway carriers. And that is as it should be, for the function of any industrial publication is to fight for its industry. And I wonder whether the glamor girls can do a better or as good a job "seeing as how" they so widely scatter their favors. Perhaps now that some of the big butter-and-egg men who have been acting as glamor girl escorts have closed their pocketbooks and are no longer taking the ladies out, it is necessary for the gals to look for new customers. But industry still has to eat its three square meals a day and we never knew a glamor girl who could cook.

John Van Dusen

Plastics In Production

... New uses of plastics are becoming more important as supplies of metals and other materials are increasingly restricted. Herein are shown properties, present uses and possible applications of an improved thermo-setting, casting resin.

By DR. K. J. LEEG
*Baker Oil Tools, Inc.,
Los Angeles*

WHILE plastic history dates back several centuries, the modern era of plastics began with the development of phenol-formaldehyde plastics in commercially usable forms. These plastics did not attain a great deal of commercial value, however, for several years after their early development, but they did come into limited use in manufacturing. This afforded the start that was necessary in developing plastic research, following which many plastics of various types and composition made their appearance on the market in rapid succession.

While the first phenolic plastics were cast plastics, the cast phenolic lost most of its importance for quite some time. This was especially true after the introduction of phenolic molding powders in the early 1920's. In its earliest form, the cast

phenolic had many disadvantages. Curing had to be done very slowly under pressure to avoid the formation of bubbles, coloring was difficult, and the material itself was hard to handle. However, about 10 years ago cast phenolics again came into the picture in a modified form. Alterations and improvements were made that tended to eliminate the difficulties, and cast phenolics assumed considerable importance in the novelty field and to some extent in manufacturing industries where few parts were needed and machining the parts was advisable.

Cast phenolics are now available in all colors except white, and in the forms of sheets, rods and tubes. The colors are quite satisfactory from the standpoint of clarity and beauty, and their light resistance is good. However, most of the colors

will fade somewhat upon prolonged exposure to sunlight.

Cast phenolics are usually cast immediately upon removal from the kettle in which the resin is made because in a liquid state the plastics are not stable, and unless cast quickly, condensation and polymerization will continue to such an extent that a satisfactory casting cannot be obtained. On the other hand, liquid casting resins of reasonable stability have been made by several concerns, but since none of these manufacturers was primarily interested in the development of this particular type of plastic, the adaptation of liquid resins to practical industrial uses was not developed until quite recently. In addition, the possibility of adapting liquid resins for industrial uses was not publicized to any great extent. Accordingly, few people know of

their existence and possible uses.

Baker Oil Tools, Inc., decided a few years ago that a plastic material that could be poured into a mold and hardened without pressure would be the answer to some of its needs. The plastic field was carefully reviewed and it was decided that a liquid casting resin would be the most desirable, provided that one of reasonable stability could be produced. Consequently, Baker purchased a cast phenolic plastic process and started to develop it to suit the specialized needs of a plastic material to be used in connection with the manufacture of certain types of oil field equipment. Specifically, the plastic was to replace cement in making guide shoes and float shoes for cementing work in oil wells. It had to be quick-setting, rigid, stable, thermo-setting, and have high mechanical strength. After considerable research, a satisfactory plastic evolved. The material was sufficiently stable to be stored for several months before use and still would set rapidly enough so that large castings could be set in 2 hr. at a temperature of 180 deg. F. While 2 hr. is long enough for the setting of any size casting, the 2-hr. period starts when the plastic has been heated through. In other words, a large casting in a heavy plaster of Paris mold may require 6 to 8 hr. curing time because several hours are required to heat the plaster through and get the plastic warm. It might be assumed that it would be possible to heat it more rapidly by using higher temperatures. However, since the plastic is ordinarily heated in an open mold, the surface would become considerably hotter than 180 deg. F. and would tend to boil and ruin the casting. Still, when using a metal mold or a thin mold of other material, 2 hr. is generally long enough to set castings of any size.

Guide shoes and float shoes were made of the plastic and tested extensively. They have given complete satisfaction in all cases, even though the equipment has been subjected to rough treatment and handling. Ball seats and stops for use in making back pressure valves for guide and float shoes have also been made. These units, which were made in large quantities in brass molds, have shown that the plastic in some cases can compete satisfactorily with compression molded plastics. This, however, only holds true when fairly thick castings are

made. Casting resin can compete with compression molded plastics on thick sections because the curing time of compression molded phenolics increases with an increase in the thickness of the casting; while, the curing time of the casting resin is nearly independent of the thickness of the casting. At the same time, cheaper molds and less expensive equipment for the casting resin decrease the amortization and

rent difficulty, due to defense requirements, of obtaining brass. Accordingly it would appear advisable to use plastic molds at this time even if they were more expensive than brass molds.

The success encountered in making molds from the plastic encouraged the company to investigate the field of mold fabrication for other industries, resulting in several interesting developments. One suggestion was the fabrication of plastic match plates for foundry work. The principal reason this application was suggested was that aluminum match plates come out rough and usually require many hours of work to finish them for use in the foundry. It was suggested that a match plate could be cast from plastic and come out practically finished. This, however, did not turn out to be entirely the case, because, while the unit that was cast showed good possibilities in that finishing the match plate was considerably cheaper than finishing aluminum match plates, the plastic match plate did not have the impact strength of the metal one and required careful handling.

At present, work is in progress on the development of a more resilient plastic, results to date indicating that a modification of the present casting resin will soon be available. This modification will provide a plastic having higher resistance to shock, thus making it more satisfactory for any use where the plastic is to be subjected to rough handling.

The next important development in the use of the liquid phenolic in tool making was in casting dies for forming metal sheets. Forming dies of various shapes were made and used in forming both aluminum and stainless steel. Stainless steel as heavy as 0.040 in. has been formed with no noticeable breakdown of the dies, and the dies show particular advantages in ease of handling, ease of making, and lightness.

A plastic die can be made from a pattern in from 8 to 24 hr. and ordinarily will require only very few man-hours of labor, making the material quite interesting from a standpoint of increasing production rates. In addition, the finished dies are usually much lighter than metal dies used for the same work and are consequently easier to handle. This permits faster changing of dies and reduces worker fatigue. One other interesting point

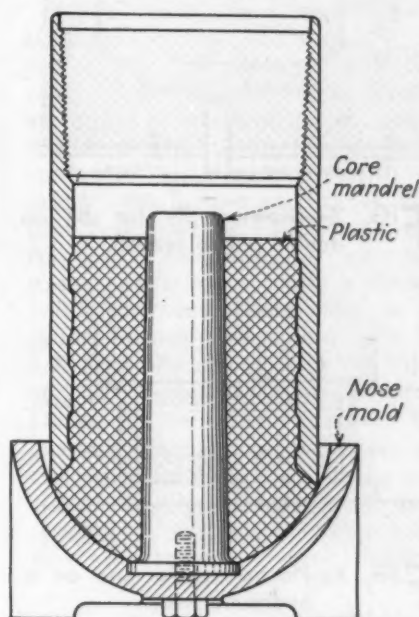


FIG. 1—Guide casing shoe made of thermo-setting resin.

equipment costs on the casting, and the point is finally reached where the higher cost of the liquid resin is compensated for by the lower cost of handling equipment.

A further development resulted from Baker's need for molds in which to cast the plastic. The molds had been made of brass, some of which were machined out, requiring a considerable amount of hand work. It was evident, therefore, that the development of plastic molds would result in substantial cost savings. Plastic cores for use in molding the interiors of guide shoes were first made to test the feasibility of this use. They proved entirely satisfactory and since then molds for plastic parts in general have been made of Baker plastic. While plastic molds do not have the life of brass molds, the cost of the brass mold is considerably higher and the overall cost of plastic pieces made in plastic molds is lower than the overall cost of castings made in brass molds. Another factor, of course, is the cur-

to be considered where high speed production is required is the fact that several dies can be cast in one mold, allowing for easy duplication of dies and making it feasible to use mass production methods not possible in the past when few parts were needed. Dies of this nature have been thoroughly tested in hydraulic presses in several shapes and have proved satisfactory.

The next development was the molding of stretch and drawing dies for use in fabricating thin metal sheets. Stretch dies are ordinarily quite large but are not usually subjected to heavy loads. As a result, it has been possible to cast such dies with hollow wood inserts or to core them, making an extremely light die for this type of work. The wood insert has the disadvantage of water absorption with consequent swelling and possible cracking of the die, so a cored or a solid die for this purpose is recommended. When a die of this type is used in a stretch press, the only special consideration that must be given to the material is that large overhangs of the die over the bed are not advisable, especially if the die is cored. This may be avoided quite simply by obtaining three or four heavy pieces of boiler plate of different widths and using one that will come within 1 or 2 in. of the edge of the die on each side.

In the case of drawing dies very few difficulties have been encountered. These dies met expectations, gathered from past performances of the plastic in other uses. It was suggested that dies be made for forming acrylic sheets. The first die made was one for a simple curve that required only a layover type of die. The particular requirements of a die for forming acrylic sheets is that the die shall have uniform heat transfer and that it will not retain enough heat to keep the plastic sheet hot in rapid production work. Cast phenolic answered the requirements satisfactorily.

The use of cast phenolic plastics has proved satisfactory for all types of sheet metal forming with the exception of impact forming. Even the use of these plastic dies in the forming of sheet metal in toggle presses has been tested and proved satisfactory.

Baker plastic has shown many advantages in the manufacture of relatively small numbers of plastic pieces. It is particularly adaptable to this field because the molds for the plastic can be made at very low

cost, thereby eliminating the amortization cost which is usually the most important factor in small lot production. Added advantages are lightness of the casting and low cost of handling equipment.

In casting, the mold for the plastic can be made of a variety of

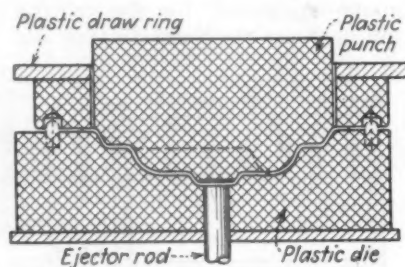


FIG. 2—Drawing die for use on double action presses.

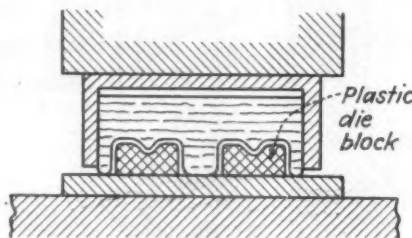


FIG. 3—Plastic die for use on a hydraulic press.

materials, such as: plaster of Paris, Hydrocal, Baker casting resin, rubber, latex, glass, wood, brass, bronze and other metals. In general, making a mold follows this procedure: A pattern is made of the article with allowances for single shrinkage, wooden patterns being entirely satisfactory. To make a plaster or Hydrocal mold, the pattern is coated with oil and the plaster cast around it. The pattern is removed, the mold lacquered, and it is then ready to make the plastic casting. For a latex mold, the pattern is coated with from 20 to 40 coats of latex, then a rough plaster backing is cast around it. The latex is peeled off the pattern and it is ready for casting. To increase the life of the latex mold the inside can be given a thin coating of lacquer. To serve as a parting medium, it can be applied by dipping the latex mold in lacquer that has been thinned with three or four parts of thinner.

If the mold is to be made from plastic, double shrinkage should be allowed in the pattern. The pattern is lacquered, the mold cast around

it, the pattern removed, the mold lacquered, and it is then ready for use. Glass molds are used only where a useful shape is available at low cost, and such molds are excellent where they can be found already in shape. Brass and bronze molds are more expensive because they must be machined. However, for large lots they are sometimes the best available material. Tin or tinned-metal is satisfactory, but has relatively short life. Iron molds are not satisfactory unless lacquered.

Setting Plastic in Molds

After the mold is made, plastic is mixed and set simply by pouring into the mold and curing in an oven. The oven temperature can range from 100 deg. to 180 deg. F. Higher temperatures give faster setting and a somewhat stronger product, but also cause greater shrinkage. If the prime requisite is a minimum of shrinkage, the plastic should be set at low temperatures, ranging from 100 deg. to 120 deg. F. for a period of from one to four days. If production is desired, the higher temperatures can be used and the plastic will set in about 2 hr. In order to mix the plastic, about nine parts of resin are mixed with one part of catalyst, then filling material, usually walnut shell flour, is added to as high as 35 per cent of the finished article. This is used primarily to decrease the cost of the plastic. After mixing is completed, the plastic is poured into the mold and brushed just as plaster of Paris would be brushed in. The mold is placed in the oven and the plastic baked for 1 to 2 hr. After baking, the plastic part is removed from the mold, the lacquer removed from the mold, new lacquer applied, and the mold is ready for another casting.

Since the casting procedure is simple and low in cost, it is quite valuable in making small lots of plastic pieces. If several parts are required, machining costs would be high, yet the cost of a mold would prevent making them by compression or injection molding. Casting resin is ideal in solving this problem. If calculations are made of the relative cost per piece, it will be discovered that from 10 to about 1000 parts can be produced more economically with casting resin. This satisfies a long-felt need for a plastic to come between the machined plastics and the compression or injection molded plastics.

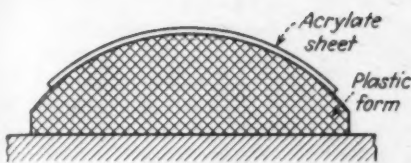


FIG. 4—Form block for acrylate sheets.

Another place in which this plastic has been found to be valuable is in casting large pieces. Compression molded pieces larger than about 2 ft. square have not been made in this country because of the high cost of a mold and a press sufficiently large to handle the job. On the other hand, pieces of two or three times this size can be cast with ease if liquid casting resin is used.

However, the plastic has some limitations that must be considered before deciding it is the answer to a particular problem, namely: (1) Liquid casting resin usually cannot compete with compression or injection molded plastics when several thousand pieces are required; (2) the plastic shows a molding shrinkage due to its coefficient of expansion and the fact that it is set at an elevated temperature. While

this shrinkage can be controlled to within fairly close limits, it still is a factor to be considered; (3) there are strength limitations in the plastic. The plastic must not be considered to have the actual strength of metals, although its relative strength in proportion to its weight is sometimes greater; (4) liquid casting resins are not impervious to all chemicals.

Physical Properties

Baker plastic has a compression strength of from 8000 to 10,000 lb. per sq. in. The shear strength is roughly one-half of this. It shows an impact strength of about 1½ to 3 in.-lb. in a ½ x ½ in. notched Izod specimen. The tensile strength is about 7000 lb. per sq. in. for the pure resin and 3600 lb. per sq. in. for plastic containing 30 per cent walnut shell flour. From a chemical standpoint, the plastic is a phenol-formaldehyde liquid resin in a hydrophilic state. It is set with an acid catalyst and becomes hydrophobic in the setting process. In general, the chemical resistance of the plastic is quite good, being resistant to dilute acids, water, and practically all organic solvents, such as acetone, esters, ethers,

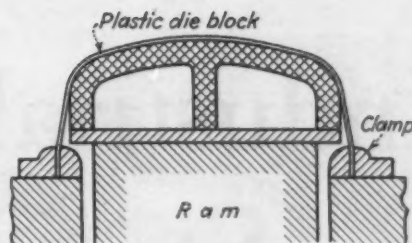


FIG. 5—Stretch die made of casting resin.

chlorinated solvents, chain and ring hydrocarbons, aldehydes, alcohols, phenols, and organic acids. It is rather quickly attacked by concentrated nitric acid and strong sodium hydroxide, but is slowly attacked by strong acids in general and by alkalies. Other physical properties are shown in Table I.

The use of walnut shell flour filler has been found to have as many good effects as it has bad effects, and in addition, decreases the cost of the material. The filler increases the plastic's ability to withstand shock and does not decrease its ability to withstand chemicals. However, it does decrease the compression, tensile, and shear strengths. This filler can be used in quantities as high as 35 per cent of the finished article, thereby cutting the cost of the plastic nearly 33 per cent. For most purposes the use of walnut shell flour or other fillers in the plastic is recommended, but there have been a few specialized cases where the straight resin gave the best results.

Future Uses of Casting Resins

While Baker plastic has been tested and proved satisfactory for many commercial applications, it is believed that there are many applications still to come that may be of even greater importance than those already found. The future of the plastic in casting dies for forming work is unquestionably great. Its future in the fabrication of match plates and jigs is dependent upon research in those fields to eliminate difficulties that have been encountered. At present, the possibilities of overcoming these difficulties are extremely favorable. Work is now under way to improve the plastic for these applications, and other new and interesting applications will undoubtedly be forthcoming.

TABLE I
Physical Characteristics of Baker Plastics

Properties	Pure Material	With 30 Per Cent Walnut Shell Flour Added
Mold shrinkage, in. per in.	0 to 0.008	0.008
Specific gravity	1.21	1.17
Specific volume, cu. in. per lb.	22.8	23.7
Tensile strength, ¼ x ½ in. sample, lb. per sq. in.	7000	3600
Elongation, per cent.	.....	.....
Modulus of elasticity in flexure at stress of 1000 lb. per sq. in., in lb. per sq. in. x 100,000.	2.6	2.6
Compressive strength, lb. per sq. in.:		
Yield point	9000	8100
Ultimate	9600	8500
Shear strength, lb. per sq. in.	4500	3900
Impact strength, Izod test, ½ x ½ in. notched bar, ft. lb.	0.18 to 0.36	0.18 to 0.36
Rockwell hardness, 60 kg. with ¼ in. ball	.....	.....
Thermal expansion, 0.00001 per deg. C.	9.3	9.3
Resistance to continuous heat, deg. F.	160	160
Softening point	none	none
Tendency to cold flow	none	none
Burning rate	nil	nil
Effects of age	hardens and darkens	.....
Effects of weak acids	none	none
Effects of strong acids	slight except oxidizing acids	.....
Effects of weak alkalies	slight	slight
Effects of strong alkalies	decomposes	decomposes
Effects of organic solvents	nil	nil
Effect on metallic inserts	none after hardening	.....
Machining qualities	good	excellent
Clarity	opaque	opaque
Color possibilities	good	dark colors

Industrial Powder Metallurgy

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... In this continuation of last week's article, the author covers the practical applications of powder metallurgy, advantages and disadvantages to be gained from its use, design of dies, sintering atmospheres and the use of metal hydrides.

IN deciding whether or not it is economically sound to make parts by powder metallurgical processes, there are certain basic conditions which must be met.

In the first place the particular part must be one that enjoys wide use. Dies for molding powder parts are expensive and in general the full life of the die should be realized in production if low costs are to be obtained. Parts should be simple in design and free of re-entrant angles if they are to be pressed.

For high speed production on mechanical presses, parts must be

small so that high unit pressures can be attained without exceeding the capacity of the available presses; usually about 100 tons total pressure.

Wherever possible, the parts should be relatively thin, that is, the dimension in the direction of pressing should be kept to a minimum. If possible, parts should be held to about $\frac{1}{2}$ in. in thickness or less. It is not an infrequent operation to mold thicker pieces, but, if possible, this should not be done since it may introduce serious pressure differentials through the piece

with resultant warpage during sintering.

Wide variations in section of any one piece are undesirable since shrinkage during sintering is dependent to some extent upon the section thickness, and great differences cause warpage.

Metals with oxides difficult to reduce, such as chromium, aluminum, silicon, manganese, and a few others, should be used only when necessary. All metals with refractory oxides can be successfully sintered, but they require more exact atmosphere control than metals with less refractory oxides.

This appears to be an imposing list of things to avoid in considering powder metallurgy as a manufacturing process. However, on the other side of the ledger are an equally imposing array of advantages to be gained.

In powder metallurgy there is almost zero scrap loss. Machining costs are either entirely eliminated or minimized. In most cases a piece can either be used as it comes from the sintering furnace or a simple coining operation will bring it to sufficiently exact size so that no machining is necessary. In general, the only machining necessary is drilling holes at angles other than in the direction of applied pressure, tapping all threaded holes, and sometimes a final grinding or honing operation. Heat treating the piece for hardening may often be entirely eliminated. Parts that cannot economically be made by normal machining operations can

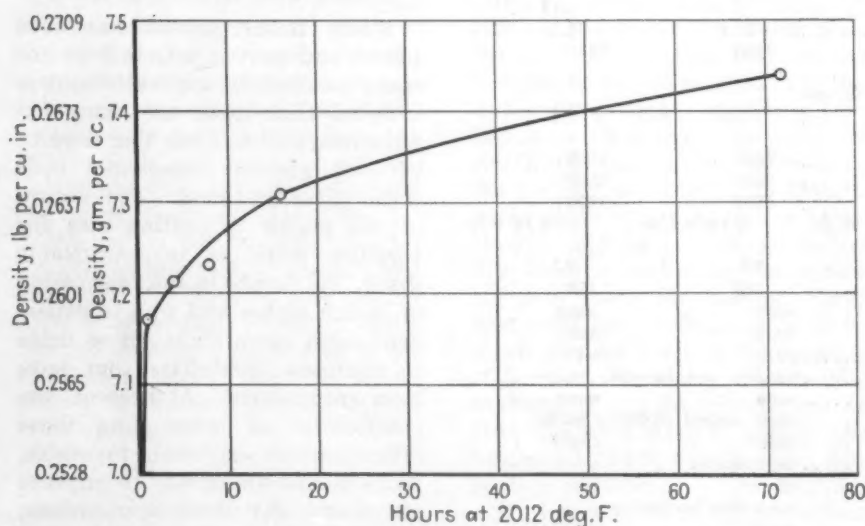


FIG. 8—The effect of time at 2012 deg. F., on density of pure iron compacts. The forming pressure used was 100 tons per sq. in.

FIG. 9 — Bearings of the oil-less type, made from powdered metals, carry surprisingly heavy loads and are rapidly assuming an important place in industry. Here is a variety of parts, some of them bearings, made from copper powders.

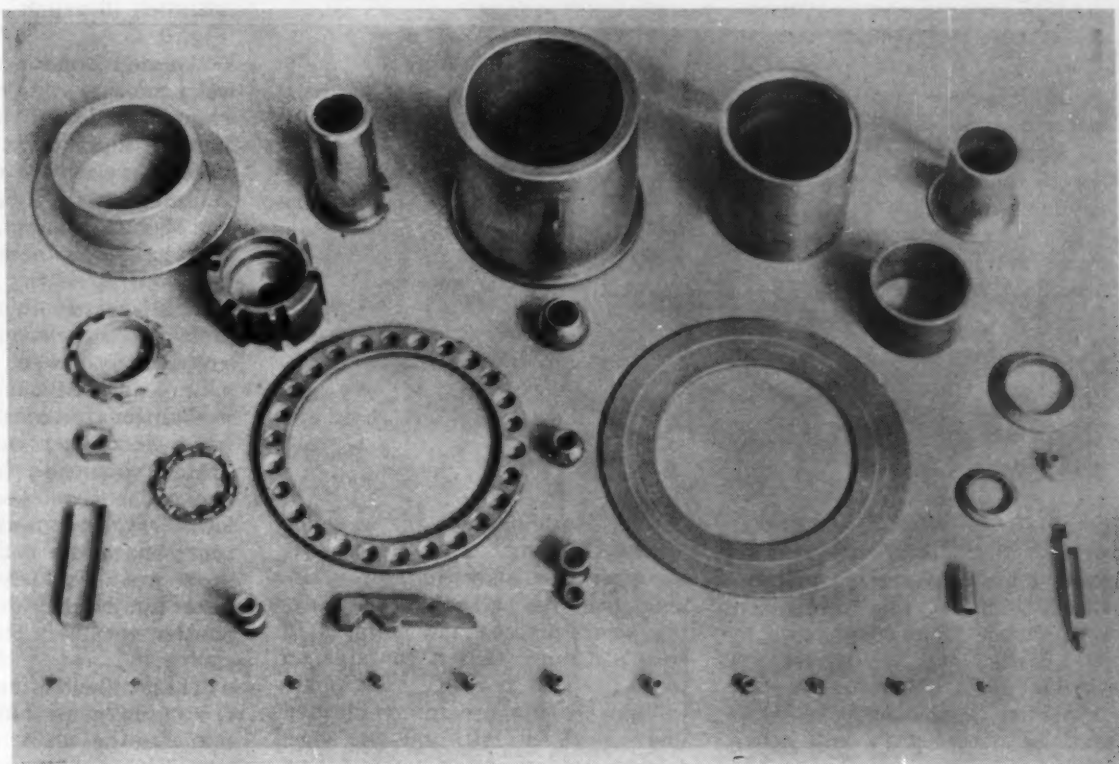


FIG. 10 — Oil pump gears for automobiles, made from powdered metal, have been an important recent development, and have proved most satisfactory. These parts were made from iron powders, and in some instances the pressings are very deep.

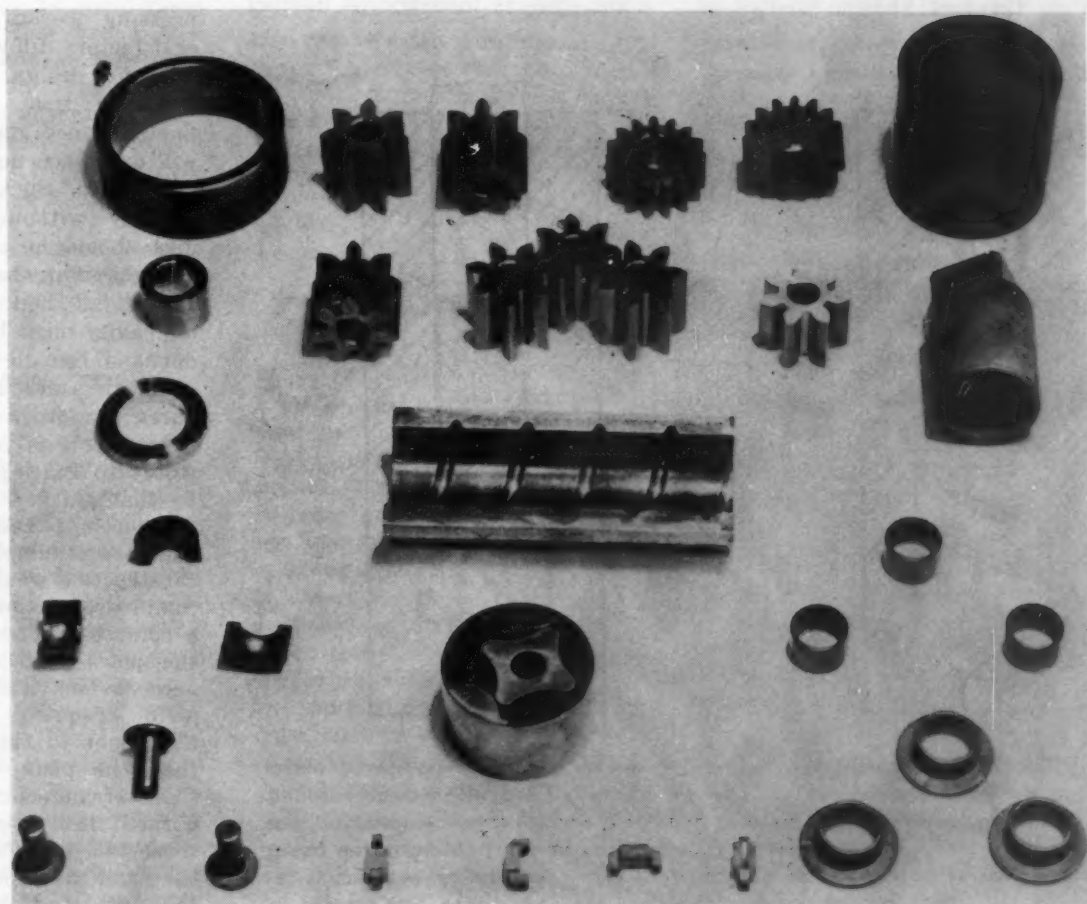
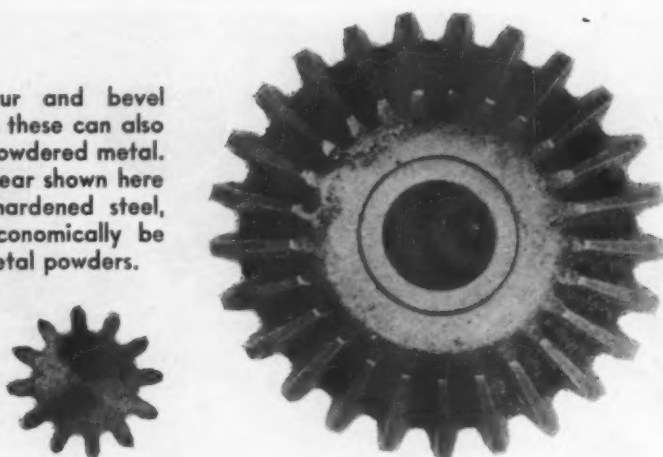


FIG. 11—Spur and bevel gears such as these can also be made from powdered metal. The small spur gear shown here is made from hardened steel, but can very economically be made from metal powders.



very often be made from metal powders. Metal compositions that cannot be made by casting or compositions that defy machining can often be made from metal powders quite easily and inexpensively. Desirable physical properties can be obtained in powder parts that cannot be obtained in any other manner.

Having listed some of the advantages and disadvantages of powder metallurgy, it may be well to examine some specific parts that can be made from metal powders. Perhaps one of the outstanding, and certainly the best known, product of

powder metallurgy is the so-called oil-less bearing. This bearing is a copper-base alloy containing tin, zinc, graphite, or some other alloying agent pressed and sintered in such a manner that it contains up to 40 per cent porosity. The pores in this bearing are interconnected and are filled with oil by some suitable impregnating method. Due to capillary action, the oil is drawn through the bearing to the shaft and only occasional replenishing of the oil is necessary. These bearings carry surprisingly heavy loads and are rapidly assuming a dominant place in industry. A number

of such bearings are shown in Fig. 9.

Another outstanding powder development is the oil pump gears shown in Fig. 10. These gears are used in automotive oil pumps and are of a relatively porous material. Running, as they do, in an oil bath and being impregnated with oil, they have satisfactory wear resistance and strength.

Small gears, other than the previously mentioned oil pump gears, are shown in Fig. 11. The small spur gear is of hardened steel and is subject to considerable stress and wear. They can, however, be made economically from metal powders. The bevel gears are typical low cost gears used for operating controls and are not subject to any great wear or stress. These latter parts can be made from a pure iron powder at a very considerable cost saving.

These illustrations are only a few of the many hundreds of parts that can be made and are being made of metal powders, but they serve to illustrate the wide variety of parts that can be economically made by this process.

Die Design

In the design of dies for powder pressing operations, there are several factors different from customary die design. It is generally supposed that because of their finely divided state, metal powders will exhibit some of the properties of a liquid. Such an assumption is entirely without foundation and dies should be designed with the thought that the powder will not flow at all, hence all parts of the die cavity must be filled with powder and the die so designed that equal pressure is exerted on all parts. In order to get this equal pressure, it is often necessary to resort to floating parts in the die so that thicker parts may be as fully compressed as the thinner ones. An example of this type of construction would be the die for a compressor piston. In this part, if a compression ratio of 3 to 1 for the powder is assumed, it is at once obvious that the walls of the piston require a much greater movement of the compacting ram than the piston head. Therefore some arrangement must be incorporated into the die to compress these two parts separately to give the same unit pressures on all of the part, and to insure that the

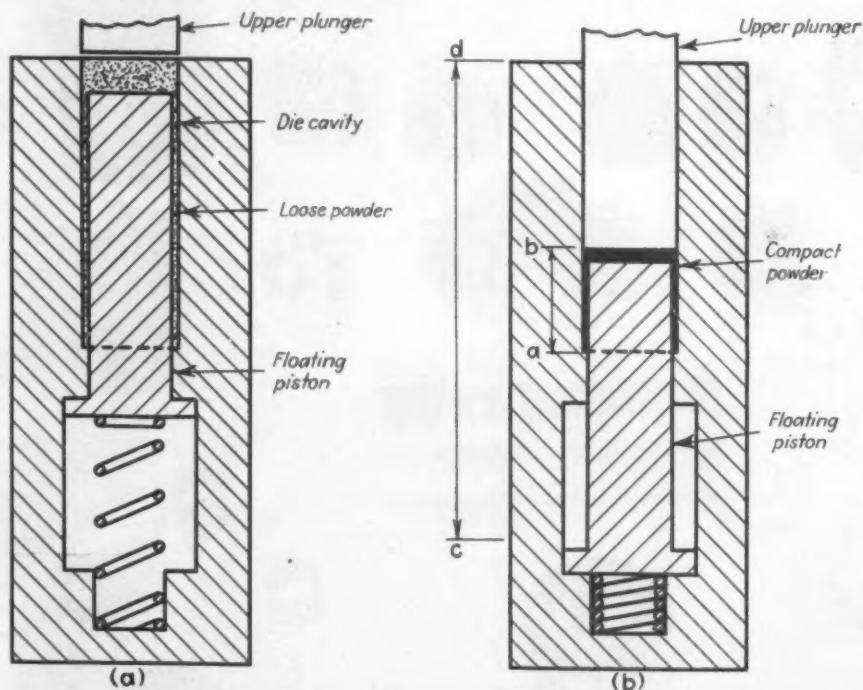


FIG. 12—The operation of a forming die for making a powdered metal compact is shown here. (a) The die cavity is filled with powder around the floating piston before pressing is started, and (b) after compression, the powdered metal is pressed into the desired shape, the floating piston being forced to the bottom of the die cylinder. When the plunger pressure is released, the compact will be forced to the top of the die cavity.

same compression ratio is used throughout.

In calculating lateral pressures in the die, it is usual to assume the pressure is distributed over some four or five times the area that would carry the load if the powder were actually a liquid. Referring to Fig. 12, if a calculation of the lateral stresses in the die shown are desired, it would be necessary to assume that instead of the pressure being exerted over a height "ab," that it is exerted over a height "cd," which is some four or five times the height "ab." This is purely an experimental determination that has been found by die designers to be successful.

Adequate provision must be made for lubricating the die since the powders employed are quite abrasive. The particular lubricant is generally kept quite secret by each powder processor, but graphite in some form is used most frequently. In this field again, considerable experimental work may be necessary to determine the best lubricant. Often a so-called powder lubricant in addition to the die lubricant is advantageous. There is some question as to the value of powder lubricants and here again one of the most common materials is graphite, though in some cases the powder particles are coated with such materials as lanolin.

Die clearances in powder work must be held to a minimum. Normally clearances are 0.0005 in. and even with these very close fits, considerable abrasion of the die parts takes place.

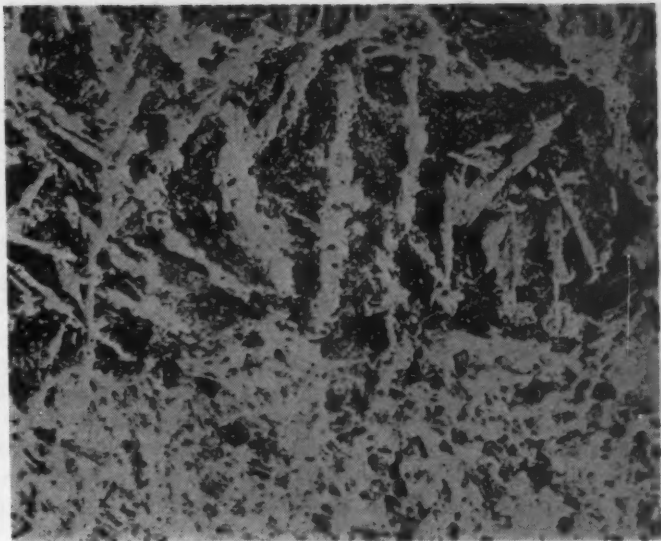
Powder dies are generally made from a high chromium, high carbon steel of about 59 Rockwell "C" or slightly harder.

Sintering Atmospheres

The atmospheres used in sintering furnaces fall into two general classes: Those that are only protective in that they prevent oxidation and reduce any oxide films that may be present; and those that, in addition to the first function, impart special properties to the powder compact during sintering.

Atmospheres in the first class are hydrogen, dissociated ammonia, nitrogen, and some combusted gases, either natural or artificial. All of these atmospheres are simply protective and do not alter the composition of the compact in any other manner than to reduce oxide films. In the case of most copper base alloys, only a mildly reducing

FIG. 13—Case carburized steel made from a powdered metal mixture containing 0.7 per cent manganese at 100 diameters. This part was sintered in a hydrogen and butane atmosphere, and has a case hardness of 63 Rockwell "C."



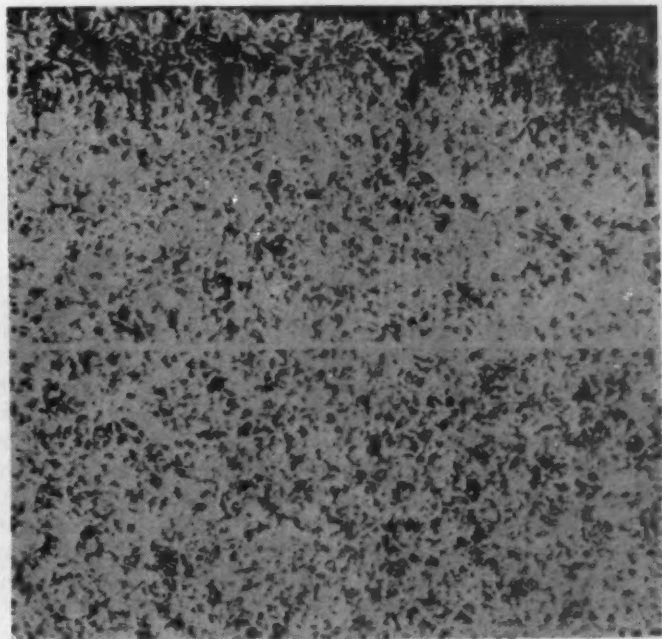
atmosphere is necessary since the alloying agent is generally tin, zinc or lead; metals that are present in the liquid state during sintering so that the problem of removal of the oxide films to allow solid diffusion to take place is not particularly serious.

In the case of nickel and cobalt-base alloys again only a mildly reducing atmosphere is necessary since the oxides of these metals are easily reduced. Iron compacts are also rather easily handled and generally for any of the above metals a combusted atmosphere nearly free of carbon dioxide, excess oxygen and with a low dew point, is adequate.

Alloys containing such metals as aluminum, chromium, manganese and silicon present an entirely different problem. For example, high-chromium alloys require an atmosphere free of oxygen and having an extremely low moisture content in the order of —45 deg. F., dew point or lower. One of the best atmospheres for this type of material is either pure hydrogen or dissociated ammonia.

For the other alloying agents mentioned, either hydrogen or dissociated ammonia is highly satisfactory provided the oxygen and water vapor content are kept low, and, in the case of a combusted atmosphere, the carbon dioxide

FIG. 14—This case carburized steel, made from a powdered metal mixture containing 0.7 per cent manganese was sintered in hydrogen with methane added at the end of the sintering cycle. The part has a case hardness of 65 Rockwell "C," and was enlarged 100 diameters.



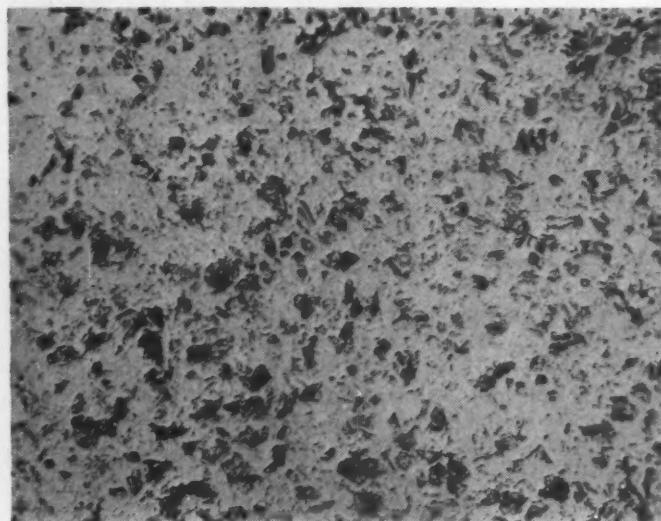
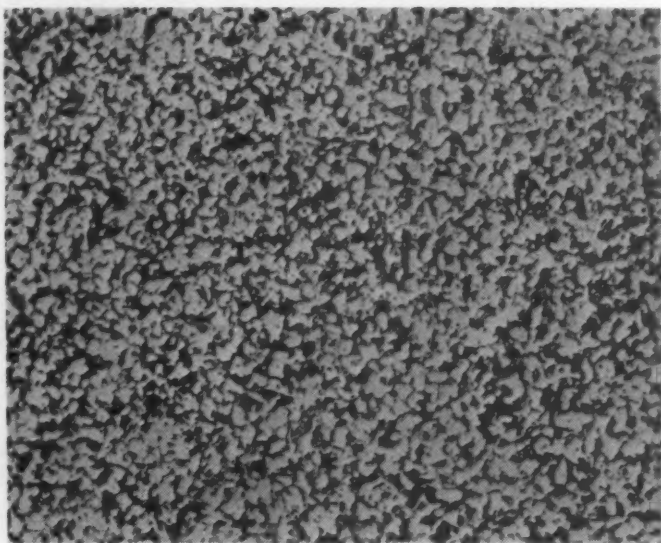


FIG. 15—Using a semi-commercial type of gas generator and starting with powder compacts containing 0.7 per cent manganese and the remainder iron, steel can be prepared with widely varying carbon contents. Above is a plain 0.3 per cent carbon steel, sintered in Endo gas, with a hardness as quenched of 54 Rockwell "C," and below is a similar steel of about 1.5 carbon, sintered in Endo gas with a hardness of 66 Rockwell "C." Both are enlarged 100 diameters.

content must also be held down.

Aluminum in alloys presents a case unto itself since its oxide is one of the most refractory known. It is possible to sinter aluminum bearing alloys in a hydrogen atmosphere if very special precautions are taken, but other methods are available that are equally effective and considerably simpler, which will be discussed under the use of metal hydrides in powder metallurgy.

It has been pointed out that if the control of oxides is the only requirement, a suitable furnace atmosphere is readily obtained. In sintering ferrous parts, however, it is often desirable to harden the final piece to some extent. In those cases where only surface hardening is desired it is quite possible to make up the part and to case carburize or nitride it after sintering is complete. By doing this,

however, one of the prime purposes of powder metallurgy, that of reducing costs by the elimination of as many manufacturing steps as possible, is defeated.

Consider, for example a simple channel in which there are moving parts and assume that this channel will be made by powder metallurgical methods. It will further be assumed that it is desirable to have this channel hardened to 65 Rockwell "C." If the part is such that very exact tolerances are not required, the piece can be made up and sintered in either hydrogen or dissociated ammonia, and at the end of the sintering cycle small amounts of some hydrocarbon such as methane can be admitted to the furnace to case carburize the part. This will be followed by a quench to harden the finished channel. Such a procedure is adequate on batch operation, but for continuous

operation it would not be satisfactory. In this case a mixture of hydrogen, or dissociated ammonia, and methane would be used for the entire sintering operation and the depth of carburization will be dependent upon the length of time the compact is in the furnace. Parts made from a powder mixture containing 0.7 per cent manganese and carburized in both of the methods mentioned are shown in Figs. 13 and 14. In connection with both of these steels it should be noted that, while the structure is slightly abnormal, it is fine grained, a decided advantage in steel parts.

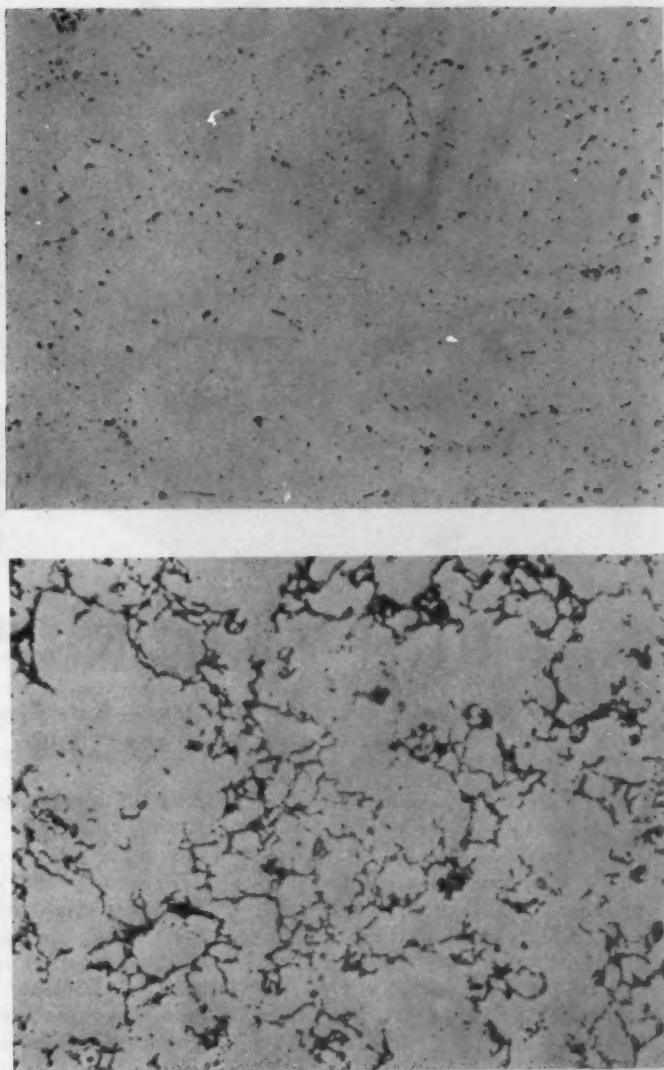
It is often true that parts could be made of powders if they could be made uniform in carbon content throughout and could be uniformly hardened. The method outlined can be used for such work but it requires a nicety of control both of furnace temperatures and methane content that is usually outside the abilities of commercial production. To meet this requirement of complete carburization and hardening, an atmosphere rich in carbon monoxide must be used and metal powders finer than are normally used are required. It has been shown that plain carbon and alloy carbon steels, if heated in an atmosphere of hydrogen, nitrogen, carbon monoxide and a slight amount of methane, are, for any particular carbon content, in equilibrium with a gas of a specific composition. This means then that if the particular gas composition that is in equilibrium with, for example, a 0.7 per cent carbon steel at 1922 deg. F., is determined, it should then be possible to carburize any lower carbon content steel up to this point or conversely decarburize a higher carbon steel to the same point. The fact that this relationship exists and that gas generating equipment is available to prepare the required gas atmospheres, makes the preparation of plain and alloy carbon steel by powder metallurgical processes an extremely attractive one.

Using a semi-commercial type of gas generator and starting with powder compacts containing 0.7 per cent manganese and the remainder iron, it has been found possible to prepare steels with carbon contents ranging from 0.1 to 1.2 per cent. Typical steels made in this manner are shown in Fig. 15.

Earlier in this article, mention was made of the use of metal hy-

drides to reduce the refractory metal oxides. There are now available the hydrides of both titanium and zirconium, and these materials, while stable at room temperatures, start to evolve hydrogen at about 842 deg. F., this evolution continuing to much higher temperatures. It is claimed by the manufacturers of these materials that all of the hydrogen is never evolved even after prolonged heating at high temperatures. Now it is well known that hydrogen produced by any means is nascent at the instant of evolution and that it is only after evolution that two hydrogen atoms combine to form the hydrogen molecule. It is also known that nascent hydrogen is far more active as a reducing agent than the molecular hydrogen, so if it were possible to have nascent hydrogen react with metal oxides at an elevated temperature, the more refractory oxides could be reduced. This effect can be accomplished quite well by the use of metal hydrides. If it is assumed that a mixture of iron powder, chromium powder and a very small amount of either titanium or zirconium hydride is pressed and sintered at about 2012 deg. F., sufficient of the nascent hydrogen will react with the chromium oxide to reduce it and allow sintering to take place. This same means can be used to reduce aluminum oxides, as shown in Fig. 16. The striking effect of nascent hydrogen in reducing metal oxides is shown by comparing the densities of two iron compacts identical in every respect except for the addition of 0.1 per cent titanium hydride to one of them. The density of the iron compact without a hydride was 0.242 lb. per cu. in., or 6.7 gm. per cc., while the density of the compact with 0.1 per cent titanium hydride addition

FIG. 16—Iron-nickel-aluminum alloys made with (above) and without (below) the addition of titanium hydride, enlarged 500 diameters.



was 0.267 lb. per cu. in., or 7.4 gm. per cc.

Another metal hard to sinter is silicon, yet by the addition of small amounts of titanium hydride, pure silicon has been successfully sintered to give a product of high density and good electrical conductivity. Titanium silicide has also

been made from powdered silicon metal and titanium hydride.

At present the cost of the metal hydrides is rather high, but in certain applications the addition of a hydride makes the difference between a successful sintering operation and failure, so that the slight additional cost is justified.

4000-Card X-Ray Diffraction Index

A 4000-card file index of X-ray diffraction data for use in the Hanawalt method of chemical analysis by X-ray diffraction has recently been published by the American Society for Testing Materials. This compilation is sponsored by a joint committee of the A.S.T.M. and National Research Council, under the chairmanship of Wheeler P. Davey, Pennsylvania State College. The data include not only Hanawalt's original published data, with

his later corrections, but also additional data that have been contributed by the Aluminum Co. of America, the New Jersey Zinc Co., together with data taken from the technical literature in the English language.

The cards give all pertinent data found in the sources with provision for insertion of accessory data such as crystal structure, density, etc. The index identifies the three

strongest lines in the X-ray diffraction pattern of some 1300 crystalline compounds, the chemical names and symbols of which are as given by the various sources.

The Hanawalt method has been described in technical literature, and an A.S.T.M. Committee is perfecting a tentative recommended practice for the identification of crystalline materials by the X-ray diffraction method.



New Rivet Needs No "Dolly"

Can Be Applied by One Man—Cuts Time and Costs in Handling "Blind" Spots

WITH the cooperation of United-Carr Fastener Co. of Canada, Ltd., of Hamilton, Ont., a new type of rivet and revolutionary method of application has been developed at the Fort William, Ont., plant of Canadian Car & Foundry Co., according to the International Nickel Co. The rivet is stamped out of strip stock in an automatic eyelet machine at the rate of 110 per min.

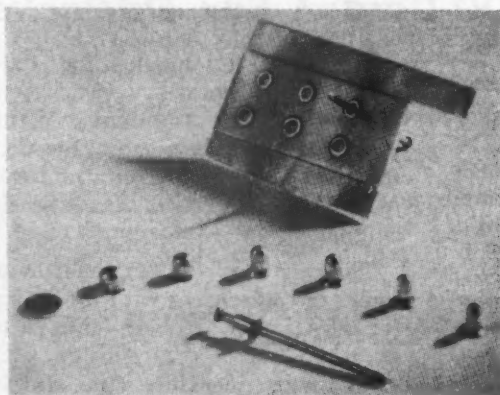
It is slipped on a commercial nail of plain carbon steel necked down under the head. The shank of the nail is used as a mandril. In fastening, the nail with its attached rivet is slipped into the rivet hole from the front side of the section to be fastened. A pneumatic squeezer is used for fastening operation. This squeezer is of standard commercial design except that its face has been re-equipped at the Fort William plant with a chuck and claw.

The claw grips the shank of the nail and pulls while the chuck presses firmly against the lip of the rivet and holds it clamped tightly against the face of the work by air pressure. Simultaneously, the claw pulls the shank of the nail, thus expanding the inside end of the rivet to fasten it tightly against the inside surface of the work. The head of nail strips from its shank when the expansion has reached a point sufficient to provide maximum holding power. The head

falls off inside, the shank is pulled outside and the fastening is as firm as a solid rivet.

Primarily the rivet is used for "blind" sections of airplane frames, wings, and fuselage where riveters find it difficult or impossible to work with a holding "dolly" or bar. Such sections are illustrated by wings in some planes where "dolly" holders must be selected for their midget size. Often it is impossible to find a worker small enough to climb inside the wings and such sections must be fastened by self-tapping screws or other devices or

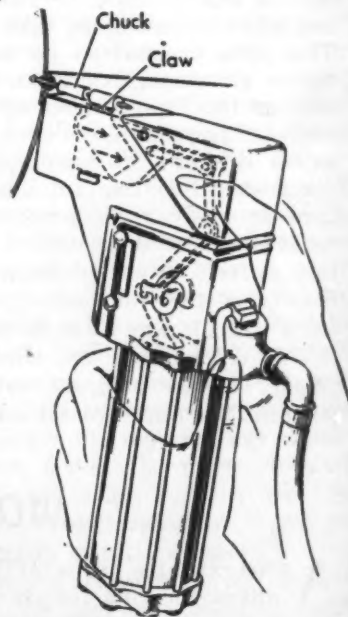
LAMINATED sections fastened by the new rivet. In plane construction the holes—where exposed—are plugged with a special compound to overcome wind-resistance. Rivets are produced in the Hamilton, Ont., plant of the United-Carr Fastener Co. of Canada, Ltd., on an eyelet machine which stamps them out of strip stock at the rate of 110 per min. The operation is performed continuously without intermediate of stress-relief annealing. Even after the work-hardening which results, monel retains a high measure of ductility not found in other corrosion-resistant materials of comparable strength.



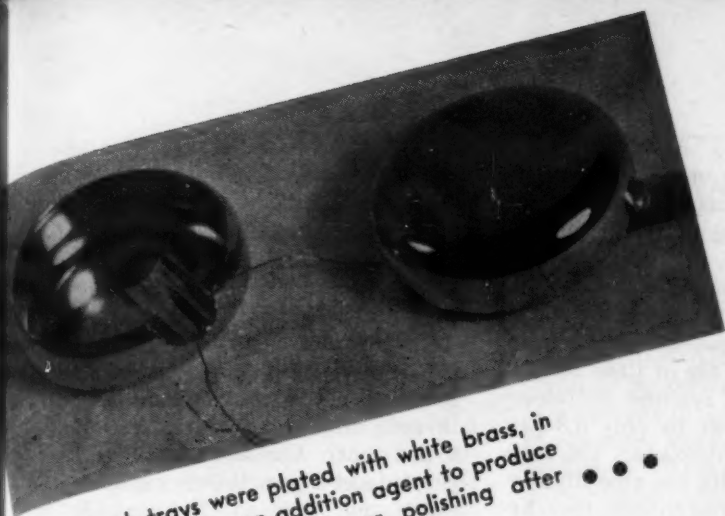
a holder must grope from the end with a long-handled "dolly" and trust to luck that he holds it against the rivet being driven. The hollow rivet can be applied from five to six times as fast as can solid rivets in blind spots.

While the rivets can be made of almost any material, the Fort William plant and sub-contractors working to its specifications have standardized on monel, duralumin, and carbon steel. Monel generally is used for stressed parts exposed to corrosion where tensile strength requirements approximate those for the steel or alloy parts to be laminated. It has been found that even after the work hardening involved by the seven forming operations and subsequent fastening, or "pulling," that the monel rivets retain a high measure of ductility.

Planes using the new rivets already have been flown in actual combat, which emphasizes another outstanding feature of the tubular rivet form of construction in war times. This is the facility of making repairs to wings and other parts at the airdrome in zones of operations. Bullet holes, for instance, can be repaired by cutting away damaged metal sections and patching with riveted sheet or strip.



THE hollow rivets are fastened or "pulled" by a pneumatic squeezer which performs a double action. The claw grips and pulls the nail while the chuck presses against the rim of the rivet holding it firmly in place. The nail head expands the inside face of the rivet and then strips off from the nail shank. A United-Carr rivet is slipped into a rivet hole from the outside. This type rivet also aptly is called a "pop" rivet because the head is "popped" or "popped" from the shank of the nail.



THESE ash trays were plated with white brass, in a bath containing an addition agent to produce a fine luster without buffing or polishing after plating. . . .

Plating Alloys

By C. B. F. YOUNG

Electroplating Consultant, New York

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. . . White brass, black molybdenum, and black and gray nickel plating are important in protecting and decorating a multitude of consumer articles, as well as in facing gages and dials. In two articles, plating procedure, equipment and applications of these metallic coatings are described.

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A GREAT many attractively colored alloys may be formed from varying compositions of copper and zinc. As zinc content is increased, a group of white alloys, known as white brass, is produced, the blue zinc color neutralizing the red copper hue. These alloys may be prepared in several ways, one of the most popular being the electrolytic method.

Platers have known for some time that white alloys of copper and zinc could be prepared, but it remained for Oplinger* to develop a suitable bath for commercial use. A white alloy can be plated from a solution that will produce a deposit containing a zinc-copper ratio of about 3:1. This plate, smooth, small grained and semi-bright, may be buffed easily to a bright finish having a bluish tinge, resembling chromium plate. However, since this deposit is considerably softer than a chromium coating, it may be more easily and cheaply polished. It is also possible to produce bright depositions directly from the bath when certain additional agents and salts are used in the solution.

*"White Brass Plating Process," by Floyd Oplinger, *Proceedings of the American Electroplaters' Society*, June, 1938, p. 137.

This white brass does not finger stain, tarnish or corrode as quickly as a zinc plate, and, when it becomes dirty in handling, the finish can be restored by polishing with a cloth. While such a plate on iron and steel offers some protection against corrosion, it is not as much as that offered by a straight zinc coating. Therefore, this white brass alloy is not recommended for finishing articles for outdoor use, being more practical for household articles, such as lamp fixtures, hardware, kitchen equipment, etc.

Brass alloys with high percentage of zinc are brittle, and should not be used where severe cold working or bending of the finished article is likely to occur, as there is danger of the plating peeling away from the base metal. Anodes also are brittle and must be handled carefully. Bar type anodes should be cast around a steel rod for increased mechanical strength, and ball anodes require steel anode baskets to hold them.

The bath is simple to make up. Sodium cyanide is dissolved in one-half tank of warm water and the cuprous cyanide and sodium hydroxide are added and dissolved. The zinc cyanide is added, diluted to about nine-tenths of the total volume with water and the sodium

cyanide as a 5 per cent aqueous solution, is added while the bath is agitated. The remaining water is then used to get the correct volume. The bath should be permitted to settle and should then be filtered, and additional agents added after the solution is filtered.

Certain factors in the operation of this bath must be controlled. These are: The ratio and concentration of the four components; the current density; the type and use of additional agents, and the per cent of copper in the deposit. White brass, 72 per cent zinc and 25 per cent copper, can be produced over a wide range of plating conditions when the components are maintained in an 8-2-8-8 ratio. The ingredient concentration should be close to that specified in the bath composition shown for Bath A in Table I and any deviation will be reflected in the deposit. A lowering of the metallic concentration in the bath increases the copper content of the deposit, while an increase produces the opposite effect. This phenomenon has been noted before by investigators. Fink and Lah* report that an increase of nickel and cobalt salts produced a change in the resulting nickel-cobalt alloy.

* *Transactions of the Electrochemical Society*, 58, 1930, p. 373.

When the bath is used to produce decorative finishes, the copper content of the deposit should be held below 30 per cent. This can be done by keeping the sodium hydroxide content at eight oz. per gal. or

more. Table II and Fig. 1 illustrate this fact, two baths being made up and operated under specific conditions to obtain deposits that were analyzed for their copper content. From Table II it will be observed that the change in the copper-zinc ratio from 1.067:10.00 in Bath B to 2:5 in Bath C is not important if the sodium hydroxide content is increased from 4.00 oz. per gal. in Bath B to 12.00 oz. per gal. in Bath C. Thus, it can be said that sodium hydroxide prevents deposition of copper or aids the deposition of zinc.

Such a condition is undoubtedly brought about by a uniting of the hydroxide with the cuprous cy-

nide to form a complex copper salt that ionizes only to a negligible extent, but forms a zincate with the zinc material that ionizes very well. Therefore, the deposition of zinc is favored.

The effect of free cyanide is not nearly as noticeable, as shown in Fig. 1. An increase of 1.867 oz. per gal. of sodium cyanide increases the copper content by only 0.8 per cent, a very slight change. The free cyanide unites with the zinc slightly more than with the copper, thereby decreasing the ionization of the zinc and aiding the deposition of the copper, thus increasing the copper content of the alloy. The control of sodium hydroxide con-

tent is more important than either the free cyanide content or the copper-zinc ratio.

Fig. 2 illustrates the variation of the alloy when the temperature varies. The greatest variation is 7 per cent, which is not too extreme for alloy plating. In fact, if the point obtained at 176 deg. F. and 60 amp. per sq. ft. is disregarded, there is only a variation of roughly 4 per cent. Considering the temperature changes, this is extremely gratifying.

Generally, increases in temperature aids deposition of the more noble metal, serving, in this case, to aid the movement of cuprous ions in the cathode area, thereby furnishing more of these ions to be deposited as metal. In practice, however, there is a tendency for copper to decrease, especially at the higher current densities. An explanation of this characteristic might be that with increased current density, more hydrogen is liberated, leaving behind OH ions. These OH ions make the film around the cathode more alkaline, forming insoluble copper compounds. However, this is only a hypothesis and has not been proved. An electrolytic bath of this nature is complex and attempts to explain erratic results lead only to complications.

Electrode Efficiency

The cathode and anode efficiencies at various temperatures are shown in Fig. 3. A rise in temperature increases electrode efficiency and, in two instances shown, the anode efficiency is 100 per cent. On some tests efficiency greater than 100 per cent was obtained, due to the fact that free sodium hydroxide attacks the zinc content of the anode and gives a very high anode efficiency.

In commercial operations, the solution attacks the anodes and increases the metal content of the bath. In some instances, especially if certain additions are made to the bath, the anode, in dissolving, unbalances the solution and causes the formation of foggy or non-bright deposits. In one test run, bubbles were observed rising from the anode when the bath was not in use, indicating that the alloy anode was dissolving. Under such circumstances, it is best to remove the anodes from the bath when not in use.

Some data are given by Oplinger

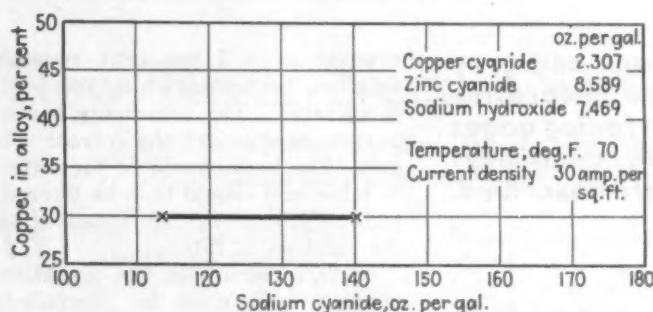


FIG. 1—The effect of free cyanide in a plating solution in white brass plating.

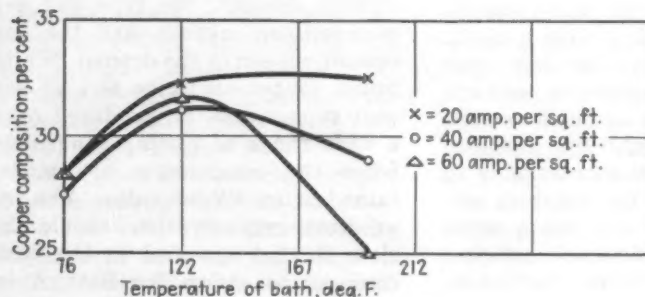


FIG. 2—Variations in the alloy content in a white brass deposit as effected by temperature.

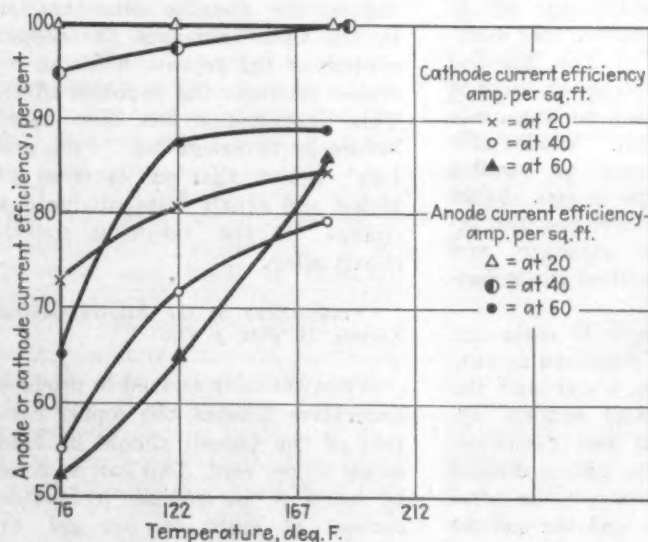


FIG. 3—Cathode and anode current efficiency in white brass plating solutions.

concerning the protection of white brass on cold-rolled steel. Immersing weighed samples of white brass in distilled water at 176 deg. F., for 6 hrs. and observing the rust spots revealed the data shown in Table IV, and the results of a salt spray test on samples, using a 20 per cent sodium chloride solution at 68 deg. F., are shown in Table V.

From these data, it is observed that the life of the deposit is almost directly proportional to the thickness of the plate, but it must be kept in mind that deposit life is inversely proportional to the number of pores per sq. ft. of plate. Therefore, baths should be kept as clean as possible at all times by filtration and other mechanical methods.

Exposed to atmosphere at Niagara Falls, N. Y., for 315 days, samples of the alloy with a deposit 0.0011 in. or thicker showed no rust, but on a sample with a 0.00041 in. coating, many tiny rust spots were observed after 140 days' exposure. Therefore, the life of the plate is dependent upon the thickness of the deposit and the number of its pores per sq. ft.

The addition agents used in the bath to produce bright white brass deposits without polishing have not been disclosed. It is believed that the material is composed of an inorganic and an organic agent, probably a molybdenum compound and gum arabic or gum tragacanth. This, however, is the opinion of the author and has not been substantiated by laboratory research.

Black Molybdenum Finishes

Black materials that can be placed on metallic surfaces are desirable for several reasons: (1) Protective finish; (2) background effects; (3) attractive coatings, and (4) special uses as optical blacks. If a good black finish can be produced economically with reasonable corrosion resistance, hardness and adherence, it is believed that the method will be well received by industry.

It has been known for some time that molybdate compounds, such as ammonium molybdate, will produce colors ranging from rainbow effects to black deposits. These coatings are produced in a solution containing ammonium molybdate, sodium thiosulfate, and some am-

FORTY-THIRD in a Series of Articles on the Technical and Economic Aspects of Metal Cleaning and Finishing

monium hydroxide, using the material to be colored as the cathode. If a current of 2 to 10 amp. per sq. ft., is used, a series of rainbows is produced. These colors become darker with longer exposures, until a black deposit is obtained. The pH of the bath may be on the acid

side, and various materials can be substituted in the molybdate solution for the thiosulfate, including nitrate, chloride, acetate and sulfate. Experiments proved that when enough zinc was added, a bright white plate of zinc was obtained. On investigations of liter-

TABLE I
BATH COMPOSITION

	Bath A, Oz. Per Gal.
Sodium cyanide	11.5
Cuprous cyanide	4.00
Zinc cyanide	8.00
Free sodium cyanide	4.00
Sodium hydroxide	8.00
Sodium sulfide	0.05
Addition agents	Discussed in text

BATH CONDITIONS

Temperature, deg. F.	68 to 77
Voltage	1 to 3
Anode current density	10 to 12 amp. per sq. ft.
Cathode current density	10 to 50 amp. per sq. ft.
Anode efficiency	80 to 100 per cent
Cathode efficiency	60 to 90 per cent
Anodes	72 per cent zinc, 28 per cent copper
Cathode agitation	At higher current densities
Filtration	Intermediate or continuous

TABLE II

	Bath B, Oz. Per Gal.	Bath C, Oz. Per Gal.
Sodium cyanide ..	11.34	12.67
Cuprous cyanide ..	1.067	4.00
Zinc cyanide	10.00	10.00
Caustic soda	4.00	12.00

BATH CONDITIONS

Temperature, deg. F.	77	77
Current density ..	30 amp. per sq. ft.	30 amp. per sq. ft.
Per cent of copper in deposit ..	35.3	28.4

TABLE III

BATH COMPOSITION

	Oz. per Gal.
Sodium Pyrophosphate, Na ₂ P ₂ O ₇ ·10H ₂ O	20.0
Nickel Sulfate, NiSO ₄ ·7H ₂ O	2.6
Aluminum Ammonium Sulfate, AlNH ₄ (SO ₄) ₃	2.0
Potassium Cyanide, KCN	1.0

BATH CONDITIONS

Current Density	3 to 3 amp. per sq. ft.
Voltage	1 to 2
pH	unknown (about 8)
Temperature, deg. F.	109 to 122
Anode	nickel

TABLE IV

No. Samples	Current Density, Amp. Per Sq. Ft.	Time of Plating, Min.	Thickness of Deposit, In.	No. Rust Spots Per Sq. Ft. Covered
2	30	2.5	0.00006	covered
2	30	5	0.00013	6000
2	30	10	0.00025	none
2	30	15	0.00037	none

TABLE V

Sample	Plating Time, Min.	After Treatment	Deposit Weight, Oz. Per Sq. Ft.	Deposit Thickness, In.	Breakdown Test, Hr. First Rust	Thorough Rust
1A	5	none	0.0824	0.00013	125	149
2A	5	none	0.0811	0.000129	125	149
5A	10	none	0.1718	0.00027	308	484
6A	10	none	0.1644	0.00026	253	380
8A	15	none	0.2336	0.00037	308	484
9A	15	none	0.2405	0.00038	308	484
11A	20	buffed	0.2513	0.00040	332	Little rust after 484 hr.
12A	20	buffed	0.2564	0.00041	308	Little rust after 484 hr.
16A	30	buffed	0.4621	0.00073	No rust after 484 hr.	
17A	30	buffed	0.4128	0.00066	Very little rust after 484 hr.	

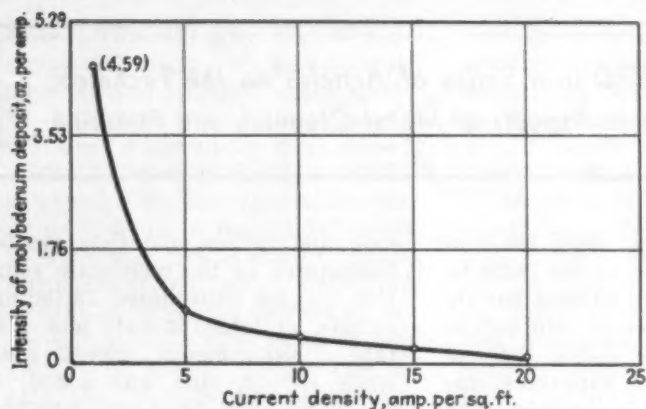


FIG. 4 — The rate of deposit of a black molybdenum coating rapidly decreases as the current density in the bath is increased.

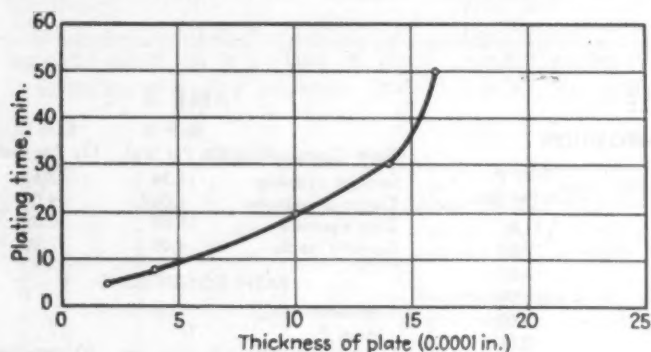


FIG. 5 — The relationship of time to the thickness of a black molybdenum deposit at low current density.

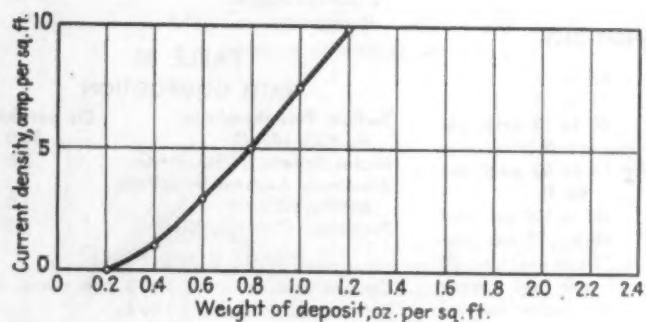


FIG. 6 — The relationship between the weight of a black molybdenum deposit and the current density.

ature on this subject, it was found that a patent had been issued for the addition of molybdenum compounds to zinc solutions in order to produce bright zinc deposits.

It is believed that Hoffman and Hull* discovered that nickel compounds added to molybdate solutions produce adherent black

deposits. In a paper by these in-

**"Electrodeposition of Black Molybdenum Finishes," Proceedings of the American Electroplaters' Society, June, 1939, pp. 45 to 50.*

vestigators, there is a discussion of this interesting coating which was developed in the laboratories of the DuPont Co., Cleveland. Table VI

TABLE VI

Bath Composition:	Oz. Per Gal.
Ammonium molybdate	4 to 5
Nickel sulfate	3.5
Addition agent	Undisclosed
Bath Condition:	
Temperature, deg. F.	130 to 175
pH (electromatic)	4.3 to 4.7
Cathode current density	2 to 5 amp. per sq. ft.
Voltage	1.5 to 3
Deposition rate	0.001 in. per 10 min.
Agitation	Yes, when high current density is used.
Anodes	Graphitized carbon

shows the bath used for this black deposit, and the addition agent included is a stabilizer, aiding in producing satisfactory luster and color in the deposits.

Materials that can be coated with this black deposit include electroplated zinc and cadmium, die cast zinc, die cast aluminum and rolled aluminum. The most lustrous deposits are obtained at temperatures above 158 deg. F., heating the bath with lead coils. Tanks may be made of lead lined steel, but rubber lined tanks are preferable.

A rather unusual characteristic of the black molybdenum plate is its ability to deposit and adhere to aluminum, which need only be cleaned in an alkali and rinsed before the plating operation. This is also true of black nickel. Iron, copper, brass and nickel are not suitable as base materials, but it is possible to apply a coating of zinc or cadmium and then plate with the black coating.

A peculiarity of the black molybdenum plating baths is exhibited when the cathode current is observed at different densities. At the outset it would be difficult to define the true cathode current efficiency of the bath since the plate is composed of several materials, as has been pointed out. However, it is possible to obtain the practical current efficiency at a given current density, and at low current densities a plate is deposited quickly. At 0.5 amp. per sq. ft., about 0.459 oz. of black molybdenum is deposited per amp. hr. Fig. 4 shows that a rapid decrease of the rate of deposit occurs when the current density is increased. At 20 amp. per sq. ft. there is only 0.0106 oz. per amp. hr. deposited.

Because of the tremendously decreased efficiencies at elevated current densities, it may be said that the rate of deposition is inversely proportional to the current density; the higher the current density, the

TABLE VII

Current Density, Amp. Per Sq. Ft.	Plating time, Min.	Throwing Power, Per Cent
5	20	81.7
10	10	89.9
15	11	88.5

lower the amount of plate deposited. Ordinarily in plating, the amount of material plated is directly proportional to the current passed through the system until gassing occurs at the cathode. In this case, there is a decrease in the deposit as the current density is increased. This would seem to indicate that the deposit obtained is due to a secondary reaction occurring at the cathode. Blum* suggested that this may be caused by a cathode reduction of molybdenum to a lower valence. The material subsequently hydrolyzes and is precipitated because of the alkaline film surrounding the cathode.

* *Loc. Cit.*, p. 49.

The relationship of time to the thickness of the deposit at a low current density is illustrated in Fig. 5, and it will be observed that the rate of deposition falls off rapidly with the time. A steep slope in the curve will be noted from 14 to 16, as compared with 2 to 10.

The relationship between the weight of the deposit and the current density is plotted in Fig. 6, showing almost a straight line function. This would imply that regardless of coating thickness, a direct ratio exists between the current density used and the weight of the deposit obtained. When this is considered in the light of the relations between thickness and plating time, it will be seen that higher current densities yield heavier deposits. This may be caused by the composition of the plate; at lower current densities perhaps more molybdenum compounds are produced. This would account for the great increase in thickness at low current densities as compared to those obtained at high densities, while the

amount of material deposited in either case is proportional to the current density used. No data are available, however, to support this theory.

When determined by the method suggested by Haring and Blum†, the throwing power of the bath is excellent. The best throwing power,

† *Transactions of the American Electrochemical Society*, 47, 1923, p. 313.

according to the Haring-Blum scale is 80 per cent, while Table VII shows the lowest figure is 81.7 and the highest 89.9. Considering the nature of the plate deposited, a plausible explanation is apparent. The black finish is a poor conductor of electricity, and, as near parts of the cathode are covered, they become highly resistant to the flow of current. The current then flows to the point of least resistance, or, to any spot not covered by the black deposit, the crevices and recesses on the cathode. Thus, all parts of the cathode become covered with the coating. A high throwing power is always obtained when a poor conductive coating is produced. For example, aluminum anodizing solutions have high throwing power because of the poor conductivity of the oxide coating produced.

One deposit analyzed showed a content of 45 per cent molybdenum, 10 per cent nickel and the remainder chiefly oxygen. It has been suggested that the coating is composed of molybdenum oxide, nickel or nickel oxide, or both. The exact relationship of these compounds or elements is not known.

The density of the coatings at a given current density is about 1.01. Black molybdenum can be deposited commercially up to about 0.002 in. thick, requiring about 1 hr. at 2 to

3 amp. per sq. ft. while the best commercial thickness is 0.001 in., obtained in 8 to 10 min. This discrepancy can be accounted for by the evolution of hydrogen after a 10 min. plating period and its increasing volume after 60 min. At the end of this time, the precipitation of the black deposit ceases.

An intense beam of light on the deposit in a dark room reveals the pure black coating of the plating. Many so called "black coatings" show traces of color in this test, especially apparent with black nickel. The black molybdenum coating is considered a pure black.

As long as the base metal is not subjected to severe bending, the deposit will lift, especially under compression, characteristic of all molybdate coatings. The plate will readily absorb protective coatings such as lacquers or varnishes, adding to the luster and brilliance of the deposit. This black coating, when applied to zinc electroplated steel, increased the salt spray life of the steel about 150 hr., and the color of the deposit was good after a one-year exposure test.

Black molybdenum plating will find many applications in the jewelry, instrument, gage dial and decorative fields. Because of the simple bath control and the deep black color acquired, this may become an important type of finish. Due to the presence of nickel, however, the coating is not suitable for finishes where magnetism plays a part, such as in dials for magnetic instruments, etc. Data on barrel plating the black molybdenum are not, at the present time, available.

Ed. Note—This article will be concluded next week with a description of black and gray nickel plating, plating methods and applications.

New Preformed Plastics

ALTHOUGH it is still in the experimental stage, an entirely new form of plastic, known as "preformed plastic," is expected to combine the advantages of the molded and laminated types. As it promises to be useful to the Army, the research work has been pushed faster than planned, according to Dr. A. A. Bates, manager of the chemical and metallurgical depart-

ments of Westinghouse research laboratories, East Pittsburgh.

A mixture of wet pulp and resin is first formed in the general shape of the finished product. Then the piece is baked under pressure in an oven to harden the resin. The preformed plastic has the strength of the laminated plastic and the moldability of the molded type.

Westinghouse chemists are now

working out methods to use this preformed plastic in several items for the Army. A new, two part helmet is being considered. The inner part of this helmet would be made of preformed plastic, which is strong but light in weight. This part could be worn by the soldier during ordinary field operations. During battle, a steel outer shell would be slipped over the plastic helmet.

Pit Planers for the Navy

THREE pit type planers of radically new design have been installed by the United States Navy in recent months for rapidly and accurately machining all classes of armor plate on the top, sides and both ends of rectangular or parallel bowed plate at one setting of the work. These machines are set up with a deep pit between their runways, however, so that large castings or weldments as well as armor plate may be machined.

The machine pictured is installed at the New York Navy Yard and was built by William Sellers & Co., Philadelphia. The other two, of identical design, are installed at the Philadelphia Yard—one made by Niles Tool Works, the other by Consolidated Machine Tool Corp. All three companies pooled their engineering on these designs, which vary only in details. These enormous units, among the largest machine tools ever built in this country, cost around \$300,000 apiece and weigh 330 tons each. Their use in the fabrication of armor plate will greatly speed up the present urgent naval expansion program. They are a type of machine that would only be built in times like these as their cost is not warranted for normal peacetime applications.

Pit planers, which are seen only in armor plate shops, differ from ordinary planers in that the work is held stationary and the tools are traversed past the work. These particular machines differ from earlier models in that they each have three tool holding heads, two of them mounted on the crossrail in the conventional way used for longitudinal cuts on opposite sides of the plate, and the third mounted on the rear of the crossrail, for cross planing the ends of armor plate. Cuts can be taken in both directions for either longitudinal or cross planing. Furthermore, in these machines, the work table is pivoted about a horizontal centerline and can be tilted from side to

side by hydraulic jacks so that the plates can be planed on one side at various angles with respect to the other side edge of the plate. There is also the usual provision for tilting the tool head rams at an angle for beveled cuts as well as provision for angular adjustment for various settings of the cutting tools at the tool heads proper.

It is also possible to set the cross-rail at an angle, up to 20 deg. either side of center for cross planing the ends of odd shaped plate. The usual practice is to plane armor plate sections on both the top and bottom of the two sides and ends to a width of about 4 in. and also on the edges of the sides and ends for fitting to adjacent plate sections. With the universal features on these new machines, it is possible to take all cuts with only one setting of the work, an arrangement that saves a tremendous amount of time over the older method in which the plate had to be shifted each time a surface had to be machined at a different angle, particularly when the weight of these plates is considered.

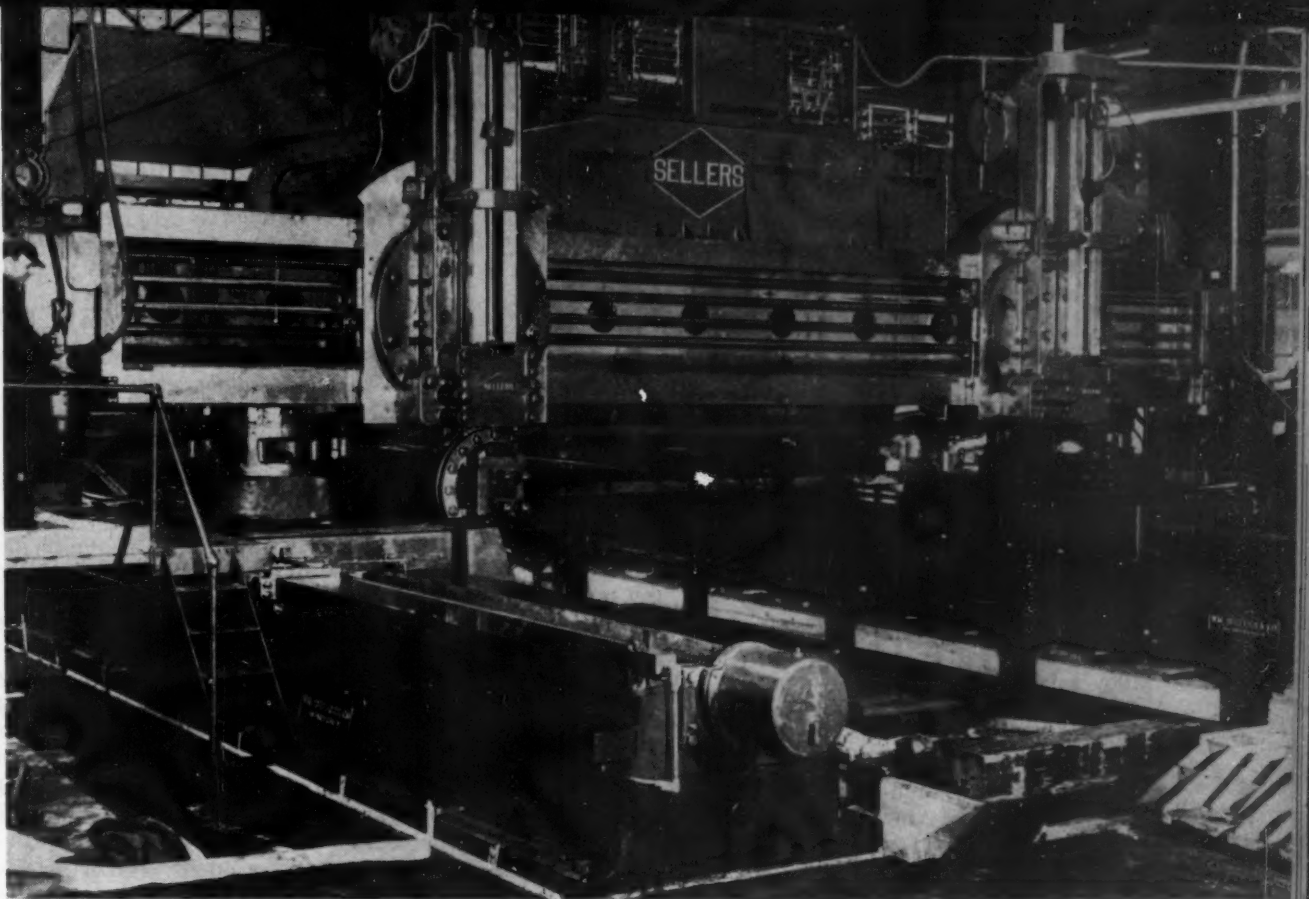
If two parallel sides of a heavy plate are to be machined simultaneously, the entire crossrail and its two end carriages and supports are traversed back and forth along the two parallel runways, which are 60 ft. long and 20 ft. apart. The crossrail itself is 30 ft. long and weighs over 60 tons. To give stability to this moving mass, the carriages have a 10 ft. bearing on the beds. Carriages are traversed by leadscrews 7½ in. in diameter partially submerged in circulated filtered oil and in order to keep them in step, the screws are driven through gearing from a single 150-hp. motor, with double shaft extensions, mounted between the two runways at one end. On the Sellers planer installed at Brooklyn, this main drive motor has the largest rating of any motor built by Westinghouse for reversing planer service.

When the cross planing head is in use, the two main carriages, and hence the cross-rail, are held stationary and the carriage for the cross planing head is traversed across the rear of the main rail. When it is desired to make an angular end cut, however, one of the main motor shaft extensions is uncoupled, so that one main carriage is held stationary while the other carriage is moved along the bed until the desired angular relationship of the rail to the runways is obtained. Cross planing is then performed while the rail is held stationary in the offset position.

The relative movements between the various components of this huge machine have called for some unusual arrangements for the electrical drives and controls, which were furnished by Westinghouse. Part of the equipment, such as the main circuit breakers, main driving motor and the main control panel, is stationary. The main pendant pushbutton stations (of which there are two), the 50-hp. cross planing feed screw drive motor and its speed control relays and rheostats are on the main crossrail, as well as two 10-hp. motors, one at each end of the rail for traversing the two standard planing heads into position and also for providing them with down feed and retraction through splined shaft drive. On the cross planing carriage is the pendant pushbutton station for controlling the traverse and feed of this unit, also the field rheostat for controlling the speed of the main cross planing drive motor.

The electrical connections between the cross planing carriage and the main rail are by means of eight horizontal wires and trolleys, similar to crane connections. Cable reels are used to provide connections between the electrical equipment on the floor and the moving crossrail. Cable reels are also employed to connect the solenoid operated tool lifts on the tool heads. For control of the 150-hp. main drive motor, a standard, constant-voltage, reversing planer scheme of control is used. The 50-hp. motor for driving the cross planing head is controlled in the same manner as the main drive motor. Both big motors are force cooled by fan. To measure motor speed, a d.c. tachometer generator is used. The indicating instrument mounted on the crossrail has zero center and is calibrated up to 100 ft. per min. in

SELLERS pit planer installed at the New York Navy Yard. This huge 330-ton machine will plane armor plate on all four edges at one setting of the work. This view shows the front of the machine, with the two standard planing heads in position. Platforms are provided on each end of the rail so that the operator can travel down the runways with the crossrail when longitudinal planing is being performed.



either direction, although the normal speed range is 15 to 90 ft. per min.

Feed measuring relays control the amount of down feed which is provided the tool heads and which ranges between $1/64$ and $3/4$ in. per traverse of the heads.

In addition to the regular limit switches used for planer operation,

overtravel limit switches in all directions of travel are provided as a safety feature. Duplicate pushbutton stations are mounted on each end of the crossrail so that the longitudinal speed of the crossrail and tool feed may be controlled from either end. The speed of the main drive is regulated by a motor driven rheostat remotely controlled

by pushbuttons on these stations. It should be pointed out that for controlling a machine of this size and type, the operator rides along with the crossrail longitudinal travel or with the cross planing carriage when that unit is functioning. Inch buttons are located at a number of points on the planer for convenience of the operator.

REAR view of the crossrail, showing the cross planing carriage and its short auxiliary rail at right angles to the main rail. The main drive motor may be partially seen located between the two runways at the near end, together with the gear box for driving one of the main leadscrews.



Casting

Alloy Rolls

By PAUL R. RAMP

USE of makeshift rigging in an effort to economize on flash costs is often the cause of unnecessary losses when casting alloy rolls. These losses can generally be overcome with a little forethought in planning the molding procedure.

A successful, and economical from the point of view of average roll cost, method of molding such rolls is illustrated in Fig. 1. This

sketch is a cross-sectional view of a 132-in. roll which is made with a standard 13-in. split core pattern shown in Fig. 2. The flask consists of a simple cope and drag arrangement, as illustrated in Fig. 3.

After ramming up, the mold is dried, placed on a level floor or bed and the gate core placed in the print in the drag section. This gate core, shown in Fig. 1, is provided with a number of pencil or pop gates and

forms the bottom of the pouring basin.

The center portion of this gate core forms the core print for the upper end of the main core and must be strong enough to support the main core. After the gate core is in place the main core is positioned. By using a split mold, such as is shown in Fig. 3, it is possible to locate and secure the core without danger of dirt or shifts. The

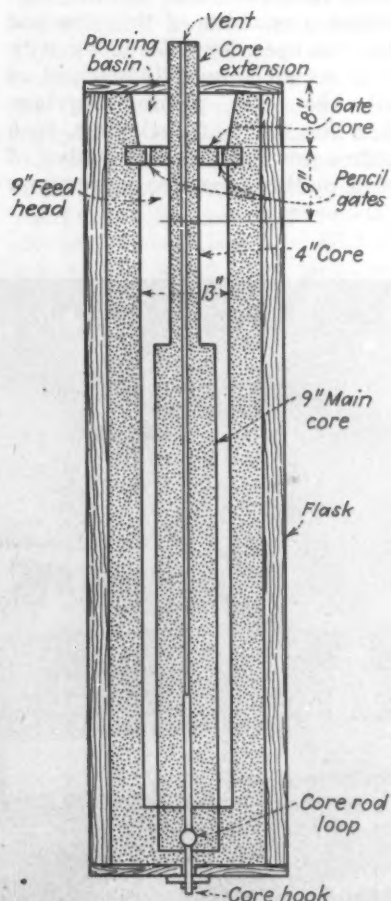


FIG. 1—Cross-section view of a 132-in. alloy roll mold showing position of gate core and core hook.

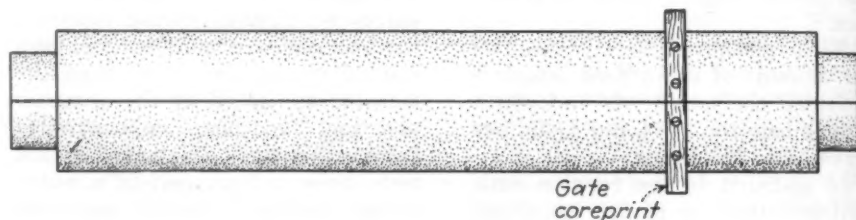


FIG. 2—A standard type of split roll pattern, with gate core print in position.

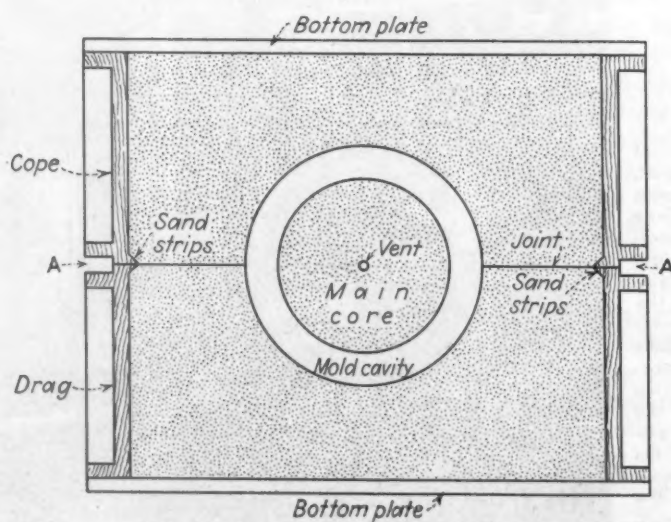


FIG. 3—Cross-section view of a roll mold shown in Fig. 1. Note the sand strip and flange at A for chalking.

main core is provided with an eye bolt which makes it possible to hold the core down (see Fig. 1).

Using a core hook prevents the core from moving when a clamp or weight is placed on top of the core. When using makeshift flasks where the core must be held down from the top end, the casting is sometimes lost by becoming deformed unless the weight or clamp is removed as soon as the danger of the core floating upward has passed.

The cope half of the gate core is next placed in the cope and the mold closed, clamped and upended for pouring.

The location of the gate core in the molding procedure described here provides additional length for the feed head. The head in Fig. 1 is about 7 in. long, while the pouring basin is approximately 8 in. deep. The vent from the main core is carried out through the top end of the core.

Fig. 4 is a view looking down on the pouring basin showing the spotting of the pencil gates. There are 12 of these gates, running not over $\frac{1}{2}$ in. in diameter. It is important that these gates be so located that the metal will drop freely to the bottom of the mold and will at no time strike the core or wall of the mold. The mold itself must be in an exactly vertical position, or it is likely that the metal will not drop freely into the mold.

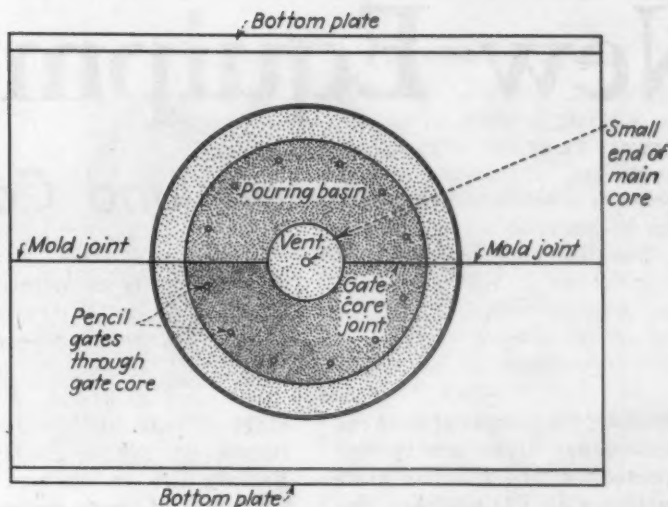


FIG. 4—Top view of the mold in pouring position, indicating the location of the pencil gates.

The core print on the split pattern (Fig. 2) can be adjusted to give the proper relation between the roll length and the depth of the feed head.

The proper flask setup for this type of work (Fig. 3) consists of two drags, with no bars except one or two tie bars, depending upon the length of the flask. The sand strips are adequate to carry the sand when the cope is raised. These strips are aided in a large measure by the half pattern that makes up

the cope and which is secured by means of a wood screw through the bottom plate. This arrangement eliminates the danger of the core dropping out after the mold drying operation.

An advantage of a barless cope is that it reduces the possibility of soft spots which often occur under the bars. A flask of this type is also easier to ram up and shake out. A space is provided on the flask (A, Fig. 3) for chalking with sand after clamping.

POWER punch crankshafts are given a magnetic test periodically at the Schenectady plant of the General Electric Co. to detect incipient cracks that might lead to ultimate failure. The crankshaft is set up on the two pole pieces of the special electromagnet, thus setting up longitudinal flux lines in the shaft so as to intercept any possible cracks at right angles. While magnetized, the shaft is sprayed with kerosene which has in suspension finely divided particles of magnetic iron oxide. Any cracks or discontinuities in the metal will set up magnetic poles which, while very slight, are strong enough to attract and hold the iron oxide particles, thereby outlining a crack which may ordinarily be invisible. This test is made each time a shaft is removed from a punch press for any reason, as a punch press crankshaft is subject to tremendous strain in operation. One large company recently tested a group of 43 crankshafts, using this method, and found that 14 of them were cracked and required replacement.



New Equipment . . .

Motors and Controllers

A wide variety of motors and electrical controlling equipment for industrial plants, factories, shops, and warehouses is introduced in this week's new equipment. Also, new lighting facilities and aids are described.

TO meet the increased need for emergency light and power protection, the *Electric Storage Battery Co.*, Philadelphia, developed four new Exide emergency light and power units for industrial use. Each unit is used in connection with an Exide battery of either the chloride or flat plate type. The units have automatic transfer switches which instantaneously transfer the battery to the emergency lighting circuit upon failure of normal a.c. supply, and when service is restored, the emergency circuits automatically transfer back to the a.c. supply. After use, the battery is automatically placed on high rate charge, which shuts off when recharging is completed and a copper oxide rectifier supplies a trickle or low rate charge to maintain full charging. The units are available in capacities of 3400 to 10,000 watts, and

other systems are made in capacity ranges of 240 to 100,000 watts. Battery life is claimed to range from 8 to 14 years, depending upon the type of battery selected.

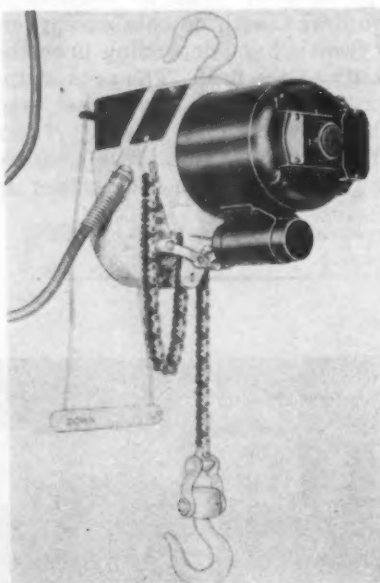
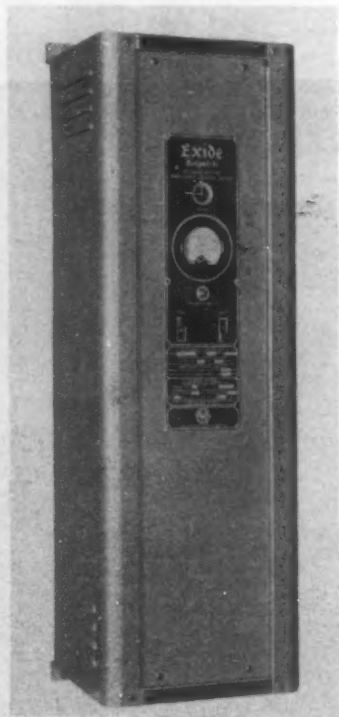
Plug-Reversing Motor

FOR use on cranes, hoists, lathes, and in other industrial applications where instantaneous reversing is necessary, a new capacitor-start reversing motor has been developed by *Westinghouse Electric & Mfg. Co.*, East Pittsburgh. Avail-

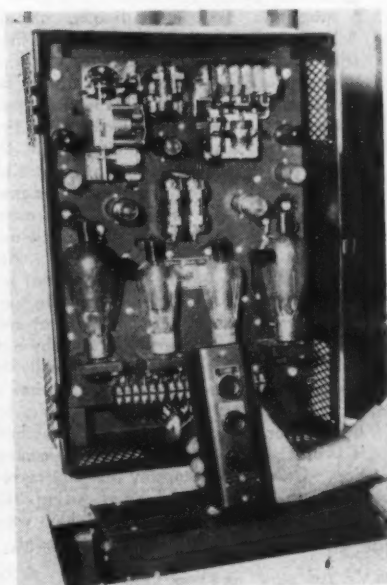
terminated speed to disconnect the starting windings, and the motor operates on the main windings as a single-phase induction motor. To reverse the motor, the drum switch is thrown to the other side.

Electronic Motor Control

AS an outgrowth of thyatron speed control for d.c. motors, the *General Electric Co.*, Schenectady, developed a new electronic control system, called Thy-mo-trol, to provide simple, stepless control of d.c. motors for a.c. lines where a wide speed range is needed. Standard units will cover motors up to 5 hp., at 230 volts. A single dial control, mounted in a push-button station, covers the complete motor speed range both above and below basic speed. The motor is automatically accelerated without excessive peaks to preset speed quickly and smoothly, and can be changed during operation. Two pairs of thyatron tubes change the motor field and armature circuits from a.c. to d.c. The control compensates for changes in armature voltage drop,



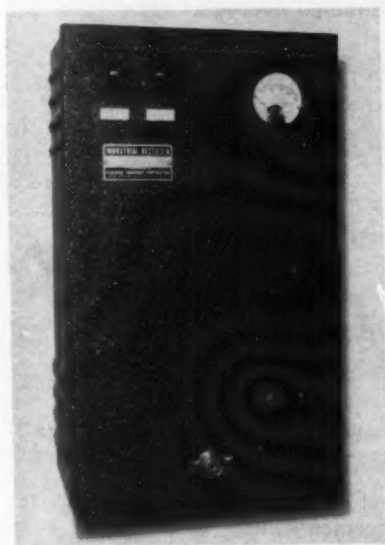
able in ratings from 1/6 to 3/4 hp., single phase, 60 cycle, the motor operates at 1725 r.p.m. on 115 and 230 volt circuits. It has no brushes or commutators. Reversing requires a special centrifugal starting switch with two contacts, a solenoid relay and a resistor, furnished with the motor. A drum switch must be provided separately to operate the motor. Line voltage starts the motor, the centrifugal-starting switch opens at a prede-



holding the motor speed constant regardless of normal-load and line voltage variations. A thermal overload relay protects the motor on sustained overloads, and fuses provide d.c. short-circuit protection.

Electronic Motor Control

ANOTHER type of electronic rectifier and speed control for d.c. motors from a.c. lines is the series 400 motor control developed by *Electron Equipment Corp.*, Palm Springs, Cal. It delivers constant d.c. to shunt field to maintain torque, while armature voltage can be changed to any value without



wave form distribution. The units afford high speed electronic overload protection, and the rectifiers also permit full control over motor speeds from zero to the basic speed or above. These rectifiers are built for any voltage, in capacities of $\frac{1}{4}$ to 200 hp.

Improved Motor

THE new Lo-Maintenance motor, developed by *Allis-Chalmers Mfg. Co.*, Milwaukee, has a wide, solid rib, integrally cast, that forms an unbroken circle of protection around the stator and is described as the Safety-Circle. The one piece cast frame and cast end-shields guard the motor from exterior knocks and abuse. A more liberal use of electric materials betters the performance. Improved bearing design delivers smoother performance, and additional cross strength is built into the stator for power ef-



ficiency. The rotor is keyed to the shaft for strength. Other features include oil drains at the bottom of the bearings for easy flushing, removable end-brackets, and a large conduit box for handy wiring.

Motor Control Center

AMOTOR control center has been devised that is not only adaptable to any combination of motors, but also can be changed to suit any new sizes of motors required by production alterations. The control unit is made up in standard sections 20 x 90 x 20 in., the individual control elements being mounted on panels 20 in. wide and some multiple of 14 in. high so that of two to five elements can be stacked in a single section. The controls are completely front connected with pre-formed wiring. The standard line starter and associated line protective device for any of N.E.M.A. sizes from 1 to 4 can be slipped into the control unit. *Westinghouse Electric & Mfg. Co.*, East Pittsburgh, builds these units.



2300-Volt Starters

A NEW line of 2300-volt, 60-cycle, general purpose starters, designed for short circuit and overload protection, has been announced by the *General Electric Co.*, Schenectady. Composed of an oil-immersed contactor with self-cleaning copper tips, wide metal bearings, copper-braided shunts, and the new EJ-2 current-limiting fuses, the control is completely metal enclosed for compactness, easy installation and safety. Four standard types of starters in this line provide for full voltage starting, re-



duced voltage starting, and reversing of squirrel cage and synchronous motors. The fuses have a disconnect feature that makes possible isolation of any individual starter without causing the entire motor line to be shut down. Isothermic relays that operate in case of locked rotor, single-phasing or sustained overload protect the motors. On low voltage or power failure, the line contactor opens and will not restart until the push button control is operated.

Fuse Cutout

FOR use on a.c. circuits up to 12,500 volts where fuse requirements do not exceed 50 amp., a new primary fuse cutout, known as type EA, has been announced by *Westinghouse*. The cutouts are Prestite porcelain housed, are moisture proof, and have high dielectric properties. The door is made of heavy Moldarta. All contacts are silver coated to insure low contact

drop. A toggle mechanism provides drop-out action of the door to indicate a blown fuse. The same fuse holder, fuse tube, fuse door, and disconnect blade are used on the 5-kv. and 7.5 to 12.5-kv. cutout. Therefore, where both voltage ratings are used, a minimum number of parts can be carried.

Circuit Interrupters

DESIGNED for disconnecting circuits in outdoor, damp, wet or dusty locations, a new non-automatic De-ion interrupter has been announced by *Westinghouse*. Enclosures are furnished in either cast aluminum or cast iron, both of which have an aluminized finish. Current ratings range from 50 to 600 amp., two or three poles, at 250 to 600 volts, a.c., and 125 to 250 volts d.c. A high interrupting capacity is provided to interrupt a circuit adjusted for 5000 to 10,000

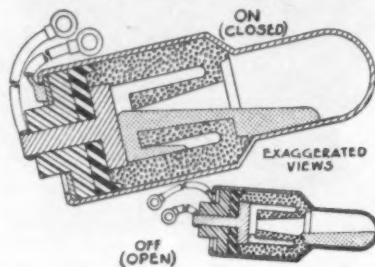


amp., depending on frame size. De-ion arc quenchers confine, divide and extinguish arcs almost instantly as the contacts open, thus prolonging contact life.

A similar non-automatic De-ion interrupter has also been announced by *Westinghouse* for disconnecting or interrupting a.c. and d.c. circuits in locations where atmospheres contain explosive vapors. Manually operated, the interrupter furnishes resistance to explosive pressures of hazardous atmospheres by its heavy aluminum walls and strong aluminum fastenings. It has the same electrical ratings as the aforementioned.

Mercury Switch

A NEW, double-flow mercury switch for industrial use has been developed by *Durakool, Inc.*, Elkhart, Ind. When the large end of the switch tips above level, the



mercury around the ceramic barrier pulls down on either side, placing the central portion of the mercury under tension so that when the contact is broken, the metal on either side of the barrier can reconnect with the opposite body and form a double contact. Switches are made in 1, 20, 35 and 65 amp. capacities.

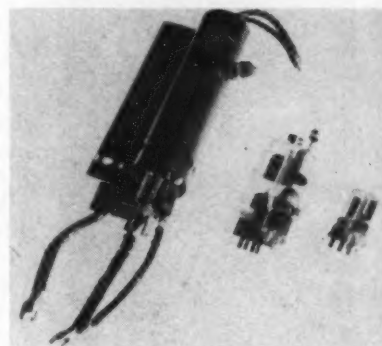
Industrial Rectifiers

A COMPLETE line of full-wave industrial rectifiers, in 11 models ranging from 100 to 15,000 watt capacity, has been announced by the *Weltronic Corp.*, Detroit. Two high-capacity single plate tubes, one for each half cycle, with a 2000 hr. guarantee, are used in the units, which are housed in enclosed cabinets designed for wall mounting. A hinged cover provides accessibility for replacing tubes. A terminal strip provides means of connecting the a.c. input and d.c. output lines, and an "off" and "on" switch for controlling the operation of the rectifier and an operating indicating light are mounted on the door. The rectifiers are designed for use in operating magnetic chucks, d.c. motors, electroplating installations and battery chargers.



Industrial Tubes

THREE new industrial tubes, the GL-414 thyatron, GL-451 kenotron, and the GL-441 phototube have been announced by the *General Electric Co.*, Schenectady. The thyatron is an all-metal, negative-grid tube for use in motor and welding controls, power rectifiers, and in voltage regulators, and operates at 5 volts and 20 amp. Maximum peak inverse anode voltage is 2000 volts and average anode current is 12.5 amp. The kenotron is a half-wave rectifier, rated 30,000 volts peak inverse, 500 milliamp. peak, and 100 milliamp. average. The tube will

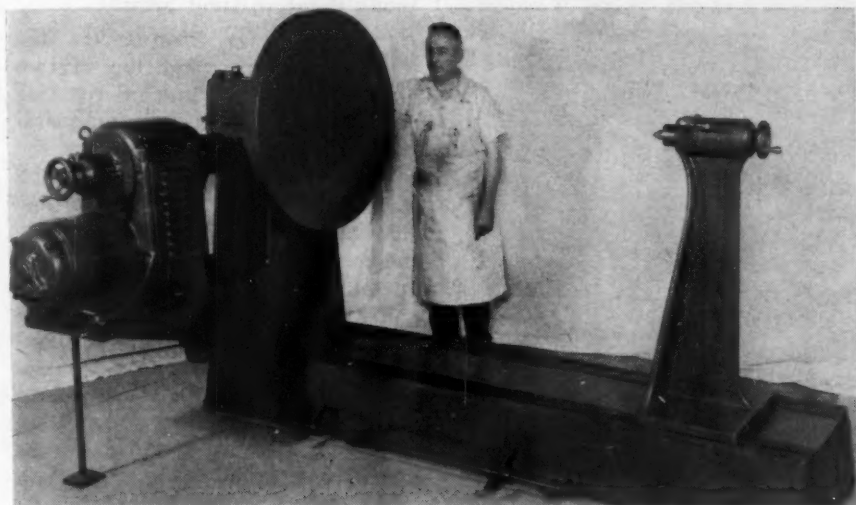


GL-414 GL-451 GL-441

meet high-voltage, low current requirements, and is especially suitable for use with smoke-precipitation and air-cleaning devices. The phototube is designed for response in the blue region of the spectrum and has 30 times the quantum efficiency of red-sensitive tubes. Sensitivity is 45 microamp. per lumen at an anode voltage of 90.

Heavy-Duty Coil Winder

A NEW heavy duty, CW-72 size, coil winding machine was recently developed by the *Globe Tool & Engineering Co.*, Dayton, Ohio. The machine is furnished with or without bed and tailstock and, where not required, the winding head unit may be mounted on a pedestal to increase the normal 72-in. swing of the machine. The machine drive is through a U. S. Motors Varidrive, driving the machine spindle through a large, hardened and ground, worm gear running in an oil bath. Suitable direct drive and back gears give a range of speeds from 2 to 120 r.p.m. Changing the gear speed in the variable speed drive permits

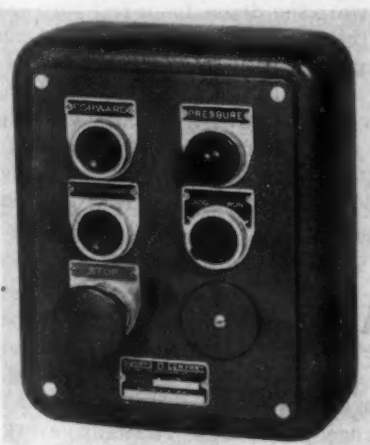


higher speed ranges. Standard motors on the machine operate on 220 to 440 volt, three-phase, 60-cycle a.c. Control is by foot treadle along the length of the bed. An interlock permits reverse operation.

Glove Tool also developed a small coil winder that permits high speed winding, driven directly from the motor shaft, or high torque winding at low speeds, driven through a back gear arrangement. A foot pedal synchronizes the brace control, motor switch and variable speed control, giving uniform acceleration. A turn counter is standard equipment on the machine and it will accommodate wire sizes from 40 to 8 gage, winding them into coils as large as 8 in. in diameter and 8 in. long at speeds up to 5000 r.p.m.

Machine Control Station

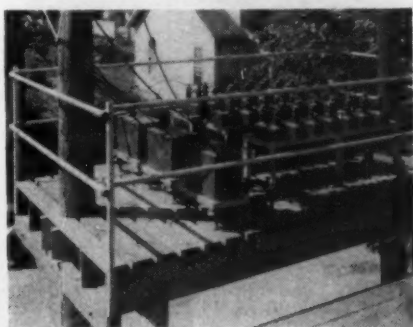
TO meet machine tool manufacturers' demands for greater flexibility of application the Industrial Controller division of Square D Co., Milwaukee, offers a new series of Class 9001, type M push-button stations and enclosures.



Available for 3, 6, 9, 12, and 16 pushbutton, selector switch, or pilot light control units, each enclosure may be furnished as an assembled station or as an enclosure only, in which the manufacturer can fit units from stock. The case is cast iron, with gasket and steel cover plate, drilled to accommodate standard drip-tight control units. It may be drilled and tapped for conduit entrance in five locations and closing plate assemblies are provided for unused openings in the cover plate.

Capacitor Protector

A NEW protective device enabling the removal of the capacitor from the circuit during dangerous over-currents and returning it to the job when the transient has passed has been developed by Westinghouse Electric & Mfg. Co. The difficulty of obtaining a gap that would break



down consistently at only a few hundred volts without burning the electrodes has been overcome by the use of an air gap under partial vacuum between two brass electrodes, all enclosed. The partial vacuum causes the current, on gap break-down, to distribute itself uniformly over the surface of the

electrode without scarring it. This small unit not only prevents injury to the series capacitors but also automatically returns them to service when the overload passes. Voltage dips are kept within 2 volts of normal by the capacitors.

Repetitive Duty Breaker

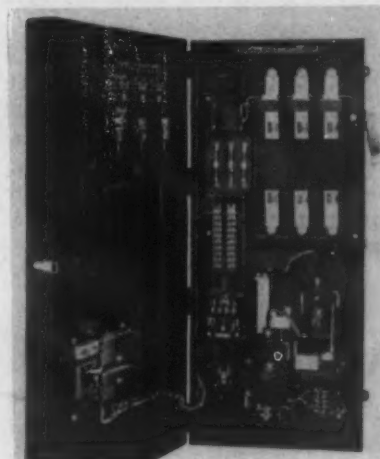
WHERE repetitive duty cycles are required, the new type DK Westinghouse circuit breaker is available in 15,000 and 25,000 amp. interrupting capacities in all standard current ratings of 15 to 600 amp. for operation on one to four



poles, 600 volt a.c. or 250 volt d.c. circuits. A rotary type, removable operating handle provides manual control, and electric operation can be provided by a motor mechanism and a shunt trip, enclosed in a separate unit. The breakers are built in four forms, an open type and three enclosed types. Oil suction magnetic or thermal magnetic overload trip units can be obtained for minimum tripping.

Automatic Control Units

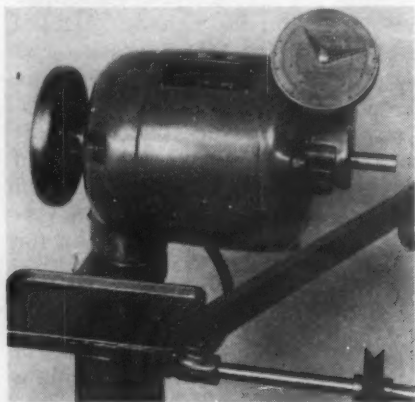
COMPLETE power and control units for resistance welding and automatic machine tool operations, including in one compact



cabinet, contractors and firing relays, a sequence timer, protecting fuses, limit switches, a motor starter, a low voltage transformer and a relay, are now available from *Weltronic Corp.*, Detroit. The units eliminate not only the necessity for separate controls, but also all external inter-unit wiring requirements, so that only the simplest wiring is required to connect the complete set of controls to the welder, while simple three-wire connections are made to the 440 or 220 volt power supply circuit. Similar units without ignitron contactors and firing relays are made for controlling a wide variety of automatic welders. Dual units are designed for use with projection and butt welding machines requiring simultaneous operation for two welds through two separate welding transformers.

Coil Turn Counter

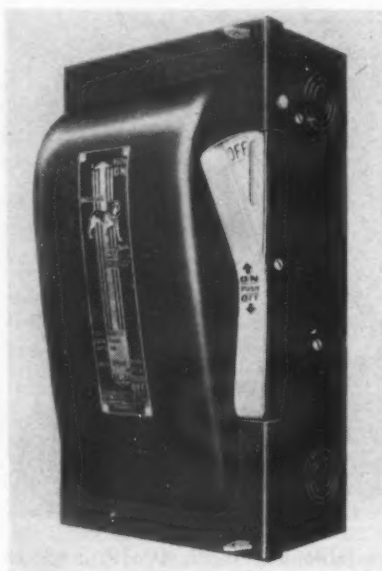
A NEW high speed, 10,000 turn counter for coil winding machines, enabling maximum speed operation, has been developed by *Globe Tool & Engineering Co.* The



counter subtracts if turns are removed from the coil, as in the case of an overrun, and by means of a simple fiber guide block, wire can be leveled on the winding spindle while operating at speeds up to 4000 r.p.m. The turn counter can be fitted on *Globe* winding machines, and an automatic stop feature for stopping the winder on a pre-determined number of turns is available.

Safety Switch

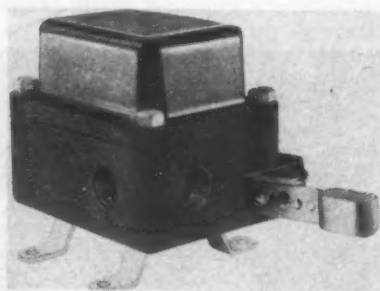
A NEW Vacu-Break safety switch with *Clampmatic* contacts and a front operated rocker type handle has been announced by the *Bull Dog Electric Products Co.*, 7610 Jos.



Campau Ave., Detroit. One of the features is a new principle of switch contact design which secures and maintains perfect clamp pressure of the switch contacts when in the "on" position, yet allows a normal push of the operating hand to break the circuit easily. The switch is available in capacities of 30 to 200 amp., in both the type A master and type C standard designs.

Float Switch

SQUARE D CO., Detroit, announced recently new explosion resisting and water-tight float switches. The water tight switch, type 9048AW, is in a heavy, cast iron cover and base, with a rubber gasket to insure against leakage.



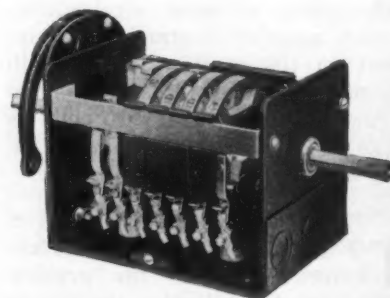
The explosion resisting float switch is identical to the water tight switch except that the surfaces between the cover and base are carefully machined to comply with hazardous locations requirements. Entries to the switch chamber are through approved openings by means of closely fitted steel shafts. The units are built for a.c. or d.c. ranging from 110 to 550 volts.

Rotating Limit Switches

THE *General Electric Co.* announced the addition of two new forms to its line of rotating type limit switches, one for operation in hazardous gas locations and the other for applications requiring water-tightness. The switch mechanisms are adjusted to operate the contacts between a minimum of one-half turn of the driving shaft and a maximum of 120 turns. Indefinite over travel will not harm the switch mechanisms. Double-break, fine silver contacts clean themselves by opening and closing in a rocking motion, and new contact tips can be installed with a screw driver. A double break is located at each end of the travel, and can be made normally closed or normally open.

Drum Controller

A NEW line of controllers for small crane and hoist motors has been announced by *Cutler-Hammer, Inc.*, Milwaukee. A rope operating lever, embodying a new equalized torque principle, eliminates sheave wheel, rope guard, and external return spring, and provides

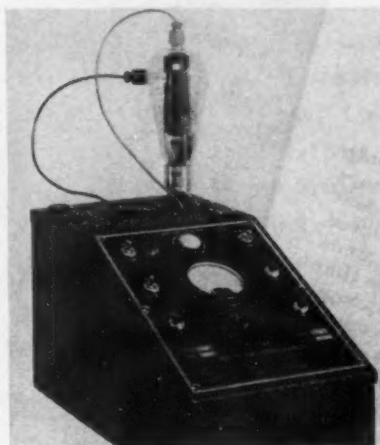


smooth, easy operation even when the rope is pulled at an angle. A new anti-plug feature increases the drum life by making it impossible to whip the drum from full forward to full reverse position. Drums can be reversed quickly, but a time delay is required in the "off" position. The new drum controls are available in self-centering rope lever, self-centering and non-self-centering radial lever types in four or six speeds.

Tube Checker

A SELF-CONTAINED tube checker for industrial type electronic tubes has been announced by the *Weltronic Corp.*, Detroit. Provided with seven sockets, it may be used to check virtually every

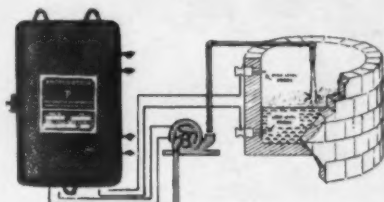
well-known make and type of industrial tube except ignitrons. Socket adaptors permit checking special tubes. The checker provides, through a 1-in. cathode ray tube, a visual analysis of plate current, while high vacuum tubes can also be checked with the milliammeter provided. The instrument has ad-



justments for intensity, horizontal and vertical amplitude, and focus for the oscilloscope. It operates on 110 to 120 volts, 60 cycle current.

Liquid Level Control

THE Photoswitch level control series, P-16, developed by *Photoswitch Inc.*, Cambridge, Mass., provides on and off valve or pump control for liquids. Probes or electrodes are attached to a tank at

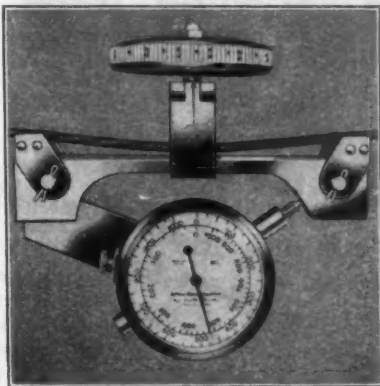


levels representing the low point where pumping starts and the high point where pumping stops. These probes are wired to the control, and when the liquid level falls below the lower probe, the control starts the pump in operation, stopping it when the tank fills to the upper probes. The control may also be used for pumping out operations, and will operate with any liquid whether it is conductive or non-conductive.

Cable Dynamometer

A COMBINATION shunt-traction dynamometer for checking tension on cables has been de-

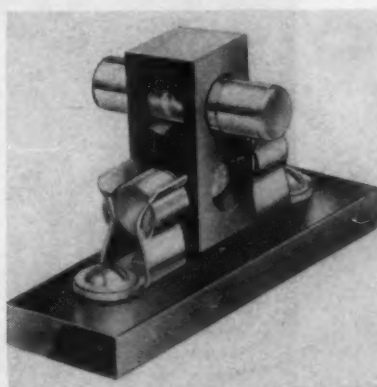
veloped by *W. C. Dillon & Co., Inc.*, 5410 West Harrison Street, Chicago. To determine tension in established overhead wires, messenger, and guy strands, the instrument is slipped over the wire, the head screwed



down on the wire, and the dial registers the shunt tension up to 1000 lb. on wire sizes from 14 to 6 gage, and on guy and messenger strands up to 5/16 in. thick. For traction readings, the top bridge of the meter is removed, interchangeable shackles inserted, and connections made. As tension is applied, the dial shows the pull in pounds. The use of the Dynamometer eliminates sighting, estimating, oscillation, and other unreliable tension gaging methods.

Fuse Changer

A GADGET that facilitates fuse changing in close quarters and gives notice on inspection that another spare fuse is required, has been announced by *Littelfuse, Inc.*, 4797 Ravenswood Avenue, Chicago. The fuse in circuit goes through one



end of a soft rubber rectangular block between the clips, and above it at right angles is an opening in the holder for the spare fuse. When inserted, the caps of the spare project beyond the holder affording an easy grip and enabling quick re-

moval of the fuse in the circuit. When a fuse blows, the spare is put in circuit, and the blown fuse placed in the holder. One end of the holder is painted red, so that an inspector or service man will know immediately that a fuse has blown and another spare is required.

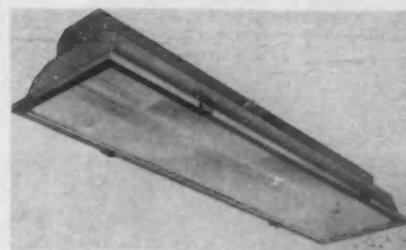
THE WABASH APPLIANCE CORP., Brooklyn, N. Y. designed a bulb for blackout lighting that provides downlighting in a soft beam of blue light. The bulb is coated inside with silver to elim-



inate filament glare and outside with a black silicate coating that covers the bulb to the extreme lighting end.

GENERAL ELECTRIC CO., Cleveland, announced a new 40-watt fluorescent lamp starter switch with a stopper element to shut off the lamp when it reaches the end of its normal life. The device is included in the same small cylindrical container that is standard for conventional starters.

THE BENJAMIN ELECTRIC MFG. CO., Des Plaines, Ill., introduced a new RF fluorescent lamp unit that is claimed to have some unusual features: more even light for power consumed, no flicker, quicker and surer starting, low cost installation and maintenance.



EMERGENCIES

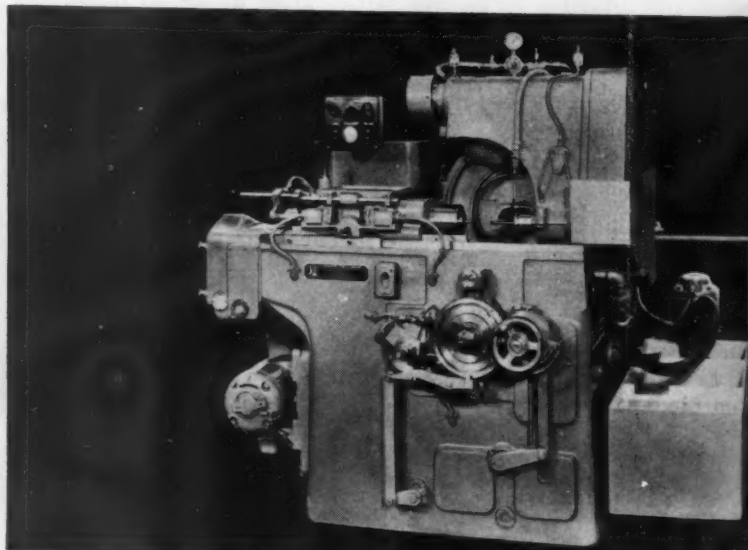


"Rugged Individualists" 1840 Style

MODERN machine design and precision workmanship owe much to the "contractors" in the Vermont shops of a century ago. Not foremen, but independent operators of a business within a business, they hired their own hands and sold the "bits and pieces" made in their departments on a contract basis. Thus they had every incentive for the constant development of new ways to cut costs and improve their product. Conspicuous among the achievements of this system was the early interchangeable manufacture of muskets for the American and British armies and weapons for the western settlers. More than a century of such successive improvements has not only contributed to defense but enabled the growth of American industry as we know it today.

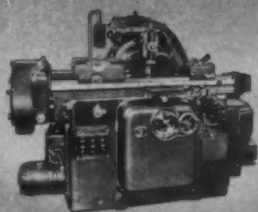
JONES &

*Manufacturers of Ram & Saddle Type
Universal Turret Lathes . . . Fay Auto-
matic Lathes . . . Automatic Thread
Grinding Machines . . . Comparators
. . . Automatic Opening Threading
Dies and Chasers*



Jones & Lamson Automatic Internal Thread Grinder,
model TG-63 (6 x 3").

AUTOMATIC THREAD
GRINDERS



OPTICAL
COMPARATORS



RAM TYPE
UNIVERSAL TURRET LATHE



ARE NOTHING NEW TO JONES & LAMSON ENGINEERS

TO Jones & Lamson engineers, and to their direct predecessors in early Vermont machine tool shops, defense emergencies are nothing new. Working under the original contract system, they produced tools and arms to aid Britain in the Crimea, to help Texas win her independence, to equip the blue-clad armies of the United States in the almost forgotten war with Mexico and in the struggle to preserve the Union. Now, for the second time within the memory of living men, the full resources of Jones & Lamson Machine Company are working 24 hours a day, 7 days a week in defense of Democracy.

For more than a century such emergencies have been an old story to Jones & Lamson engineers and their predecessors.

In every such crisis are the improvements, refinements and developments originating here. To cite a single example, the modern technique of optical projection inspection and precision thread grinding for mass production is a Jones & Lamson development which had its roots in the last emergency and is now full grown to meet this one.

And the best feature of such developments is that they not only implement defense, but they enable industry to meet in peacetime competition.

That is why it pays two ways to put production problems up to Jones & Lamson engineers. By all means write them today. Inquiries from large plants or small receive prompt and thorough study.

LAMSON MACHINE COMPANY

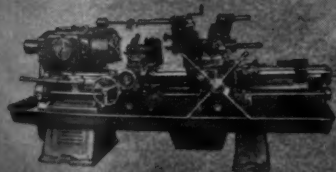
SPRINGFIELD, VT., U. S. A.



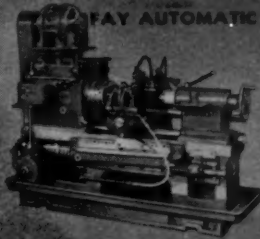
Jones & Lamson Automatic Thread Grinder, model
TG-636 (6 x 36").



SADDLE TYPE
UNIVERSAL TURRET LATHE



FAY AUTOMATIC LATHES

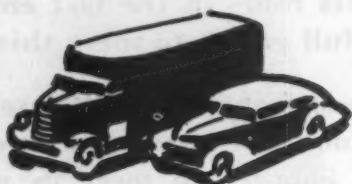


AUTOMATIC OPENING
DIE HEADS

PROFIT PRODUCING
MACHINE TOOLS

Assembly Line . . .

• Wage demands hamper vital program for training tool and die workers . . . Unions refuse to cooperate unless pay requests are met . . . Kazbler, new auto czar, appoints former Buick president as assistant.



DETROIT—A program of training within the tool and die industry and upgrading to provide greatly increased manpower to tool up the automotive industry for war production is urgently needed in Detroit.

Such a program has been proposed but is stymied by union demands which appear to hinge on the question of wages. Whether wages or some other objective of UAW leaders is the real bottleneck will soon be known.

On the surface at present, wage demands by the union can certainly be given full credit for tying up any major attempt at employee training in industry for tool and die jobs. In the wage discussion, the union appears to have hold of the wrong end of a two-edged sword; it is in the very untenable position of trying to argue the question pro and con simultaneously. On the one hand, it is arguing for an increased wage differential to be paid workers in the independent tool and die shops; on the other hand, it is asking the so-called captive shops (tool and die shops operated by automotive manufacturers in their own plants) to increase their wages enough to wipe out the differentials that exist.

It has been a long-standing contention of the union, and one that appears to be recognized by the tool

and die people themselves, that there is some adequate reason for a differential in wages between the independent and captive shops. Lay-offs in independent shops have contrasted sharply with the greater job certainty of workers in captive shops, and it also is asserted that premium pay is warranted by the extra pressure that is sometimes necessary to get out job shop work on time. Anyhow, the independents have always paid a premium rate.

Now the union is negotiating with the tool and die shops (independents) for a still greater premium, wanting to add another 15 or 20c. to the differential.

WITHOUT a blush, the UAW is also persisting in the demand that the captive shops increase their rates up to the level being paid by the independents.

This two-way argument could go on forever, and the union might just as well mount its end of the

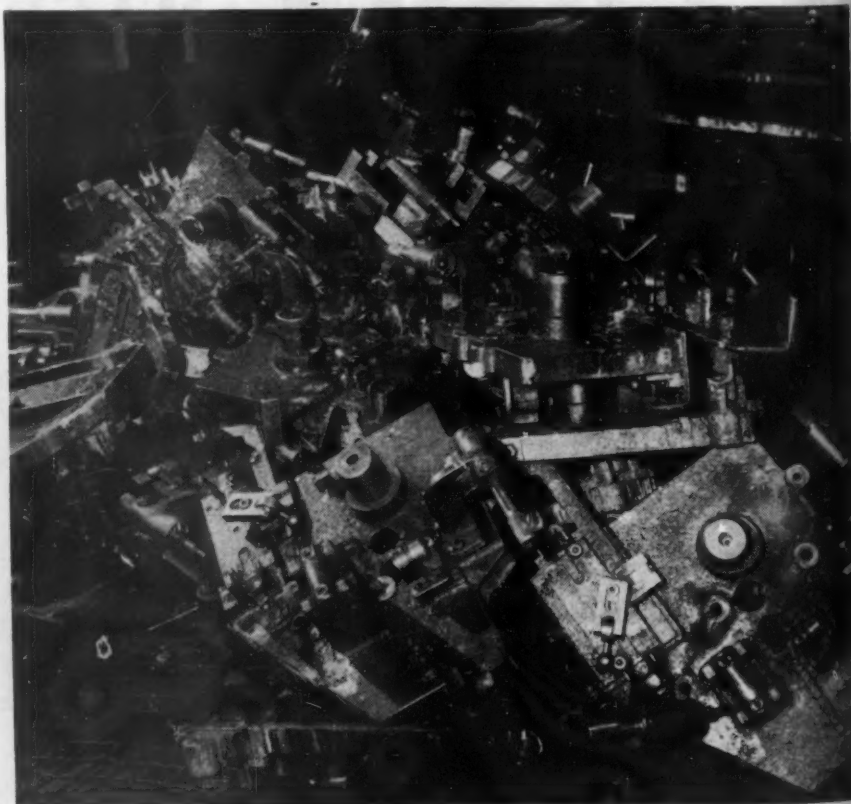
argument on an endless chain, because it is going to go around and around anyhow.

The way the job-training angle enters into this discussion is that the union has flatly refused to go ahead on any job training program unless the wage demands in connection with the captive shops are met.

This refusal of union cooperation in the war program has an interesting sidelight. The larger plants, such as Ford, Chrysler and General Motors, have had a long-standing practice of training tool and die workers and upgrading high class production workers into their tool rooms. There has been little union opposition to such training programs because the large union memberships in the plants have included many individuals who wanted to be promoted into tool room work. Their weight in the union was sufficient to overcome any and all objections from skilled workers in the tool

NO MORE AUTOS: This scrapped machinery was once part of assembly lines at Chrysler Corp.'s Plymouth plant.

Wide World photo





**103
R.P.M.**

**56
R.P.M.**

One reason why Mult-Au-matics Save

One of these two adjacent stations on an 8-spindle Type D Mult-Au-Matic is operating at 56 R.P.M. — the other at 103 R.P.M.

You can have *any* speeds you want from 27 to 241 R.P.M. (on the 12" machine) with choice of feeds to match, at *any* station. Is it any wonder that a Mult-Au-Matic is one of the fastest, most versatile machines available *anywhere* at *any* price?

ONLY MULT-AU-MATIC HAS ALL THESE FEATURES

- | | |
|---|--------------------------------|
| 1. 8 Stations | 5. Automatic Operation |
| 2. Independent Speeds and Feeds at each Station | 6. Easy Changeover |
| 3. Horizontal Chucks | 7. Continuous Flow Lubrication |
| 4. Minimum Floor Space | 8. Interlocking Safety Devices |
| | 9. Easy Tooling |

THE BULLARD COMPANY
BRIDGEPORT, CONNECTICUT

rooms who might have protested against an influx. In the independent shops, the preponderance of skilled workers resisted every attempt at training new men, because the skilled men objected to dilution. Several years ago, at least, there were attempts to institute training programs in the independents' shops but the union successfully resisted.

The training program is needed most today to fill out employment in the independent shops, and it is here that the union resistance is strongest. "Is this the real bottleneck?" is the question raised by those who have watched the union dilly-dallying with their Janus-like arguments about wages.

THE need for tool and die workers is really important. There are some 450 jobbing shops in Detroit, all of them operating 10 hr. per shift, seven days per week. But most shifts are undermanned, and some plants are capable of working only one shift. All the reservoir of skill is exhausted and more skilled hands must be trained. It has been estimated that the manpower in jobbing shops could be quickly increased one-third by a training and upgrading program.

The UAW is penalizing the war program, not the manufacturers, in its devious resistance. The condition should be recognized by authorities who are most anxious for an immediate acceleration in war output.

The long-standing dispute between the UAW and General Motors about payment of time-and-a-half and double-time for weekend work on swing shift operations in defense plants appeared early this week to be headed for definite settlement. This issue exists throughout industry but has been localized in the GM-UAW argument since last spring when GM raised the point and insisted that its new contract with the UAW should settle the matter. Discussions continued on and off throughout the year until after Pearl Harbor, at which time immediate settlement seemed necessary. Then GM and the union agreed to submit the issue to arbitration. An impartial arbitrator was sought—and nearly agreed upon—when it was decided by both parties that the issue was important enough to warrant set-

tlement by the government itself.

The decision that comes out of the War Labor Board after the hearings which started on Tuesday will be of import to all war industries. It is well that the issue will be settled nationally, rather than by a single arbitrator acting for just one firm and the union.

The stand taken by General Motors is essentially that no employee should be paid overtime unless he works more than 40 hr. in a single week, regardless of whether he works Saturday or Sunday to complete the 40-hr. schedule. This, of course, is in line with long-established union precedents in other industries that normally operate on a seven-day basis.

An example from the printing trades should illustrate the point: There are in existence contracts between various printing trades unions and newspapers which provide that "five day shifts or five night shifts shall constitute a week's work. . . . All work on Sundays for regular issues during regular shift hours shall be paid for at regular rates." That is simply an honest definition of a week's work. The same trades union group, by the way, has an agreement with commercial printing shops (not newspapers) which states that "five days, Monday to Friday inclusive, shall constitute a week's work." That, of course, is simply a recognition of the fact that the commercial shops are not on the same seven-day schedule that newspapers must follow.

THE union demand is for a swing shift which will pay time-and-a-half for Saturdays and double-time for Sundays simply because "it is provided in the contract." The union asserts, on grounds difficult to understand, that refusal of the auto plants to pay overtime under these conditions is merely an effort on the company's part to make greater profit. Obviously, the union leaders' reasoning on this point is a little bit "thick."

Meanwhile, the union is also demanding a \$1.00-a-day raise in pay in General Motors Corp. plants. Increased living costs and the company's profits in 1941 are cited by the union.

Despite the argument, General Motors has gone ahead and insti-

tuted the swing shift plan in several of its war production plants. It is not paying time-and-a-half and double-time rates as demanded by the union, but has agreed that if the War Labor Board decides that the overtime should be paid, it will make the payments retroactive.

In forthcoming contract negotiations with GM a union shop clause also will be asked. This is a natural aftermath of the Ford union shop agreement of last summer and has been anticipated as one of the bargaining points in GM and Chrysler negotiations that are coming up.

Announcement last week by Lt. Gen. Knudsen that there would be a great increase in automotive production of aircraft and engines appears to have been a little premature as far as the automobile firms are concerned. No confirmation can be obtained from General Motors regarding statements or rumors that it will soon engage in fabrication of four-engine bombers of an undisclosed type nor that it will have anything to do with new airplane plants to be set up at undisclosed points in the United States. Nor is there any confirmation of the report that Chrysler will erect an engine plant near Chicago under a 100-million dollar contract. However, Chrysler is understood in trade circles to be about to undertake the manufacture of Wright airplane engines and it is speculated that Knudsen was referring to this.

THE volume of aeronautical work now being carried on in the automobile industry has had an impact on long-standing and famous names. First of all, the Society of Automotive Engineers now has under official consideration a change in its name so it will read "Society of Automotive and Aeronautical Engineers." This proposed change awaits approval of the membership of the Society at its annual meeting next summer. (About three decades ago SAE changed its name from "Society of Automobile Engineers" because the word *automotive*, practically coined at the time and for the occasion, was considered to be all-inclusive of automobile engineers, aviation engineers and others in the transportation field.

[CONTINUED ON PAGE 133]

Ready for Action ARMORARC



Army M-3 tank taking steep grade in maneuvers. Photo by Acme.

Stainless Electrodes

Alloy Rods' new ARMORARC Type A Stainless Electrodes possess exceptionally high physical properties for use in ALL types of armor plate welding . . . in Uncle Sam's tanks, scout cars and combat cars. Use of uniform ARMORARC for armor plate provides a more perfect weld and assures the welder of: welds that do not crack . . . low splatter loss . . . easily removed slag. Ready-for-action ARMORARC welds can "take it"—same as the welds of all other Arcaloy stainless electrodes. Alloy Rods Company manufactures exclusively stainless steel electrodes of all analyses—can furnish you with the right type rod for your welding job. We invite your inquiry.



ALLOY RODS COMPANY, YORK, PA.

Washington . . .

• Direct war needs for steel threaten allotment to railroads . . . Carriers seek to save vital metals by substitutions, other steps . . . Still greater clamping down on steel for civilian use seems inevitable.



WASHINGTON—So pressing are defense steel needs that, despite conservation steps which they claim made it possible for them to pare 1942 requirements from 9,000,000 to about 6,500,000 tons, it is evident the railroads are not going to get even the lat-

ter quantity. This is indicated clearly by WPB's first quarter allotment of only 900,000 tons, which, instead of 25 per cent of the year's estimated requirements is only about 15 per cent. While the first quarter rail allocation of 538,000 tons exceeds one-fourth of the 1,632,000 tons estimated for the 12 months' needs, WPB put in a bounce-back provision on this item. Therefore the carriers may or may not get full rail requirements.

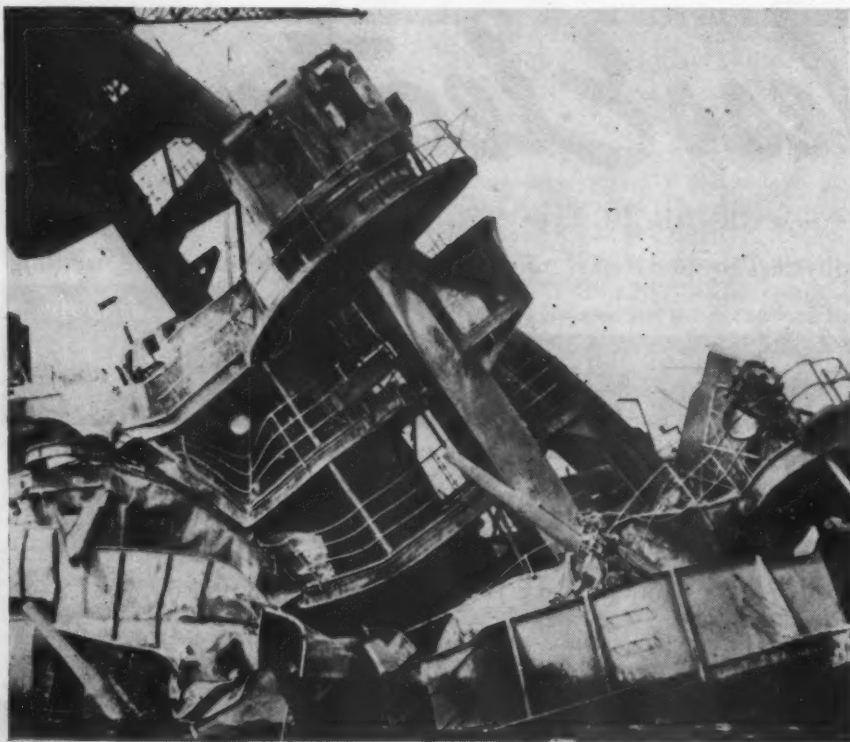
WPB stipulated that if rail rolling schedules interfered with shell production, the rail tonnage will have to be shunted aside. As a matter of fact it may well be true that, stipulation or no stipulation, other schedules of other railroad tonnage, highly essential as it is, may be brushed aside or considerably tapered off to give way to steel that must be rushed direct to combat zones. The war has taken a turn pointing in that direction and it is a disservice to disregard the desperate situation that confronts the United Nations.

THIS situation is reflected in constantly rising estimates of direct defense steel needs. There seems to be no limit to the upward move on requirements but since all things ultimately have to come to an end the limit on steel likewise will have to be reached. This suggests even further clamping down on civilian supplies even though the limit in this direction has been closely approached. That this is the case is indicated by some estimates that direct defense, lend-lease steel and essential civilian demand—the latter an admittedly nebulous term—will take as high as 85 or even 90 per cent of the 1942 steel production. Roughly it may be estimated that this would mean the unprecedented total of about 55,000,000 tons of rolled steel.

Conservation, substitutes and redesigning of specifications are being resorted to on a constantly widened scale but still more intensification on these alternatives will be necessary. Changing of specifications is being done in most instances, as a matter of conserving tonnage but in others it is done for the purpose of freeing capacities for direct military needs.

ONCE THE ARIZONA: Twisted scrap, a tangle of guns, searchlights, cranes and armor plate is all that is left of the fine steel foremast of the battleship "Arizona" after the Japanese attack on Pearl Harbor, Dec. 7.

Press Association photo



AN example of the move in the latter category is the WPB program on plates. In order to place sheared plate capacity completely at the disposal of the Army and Navy, the steel industry has called upon C. E. Adams, Chief of WPB's Iron and Steel Branch, to have users of plates to change design and transfer rolling to strip mills. The strip mill plate output nevertheless will go for both direct defense and essential civilian requirements, including those of the railroads. The plate conversion program, long a matter of official discussion, was formally laid before the Steel Industry Advisory Committee on Wednesday of last week. A report on plate production was presented to the Committee by J. V. Honeycutt and J. L. Block, Iron and Steel Branch executive consultants as the result of a recent survey of 77 mills, representing all of the affected units of the entire steel industry, whose details have been published in *THE IRON AGE*.

To insure their continued opera-



Grinding the bore in a short shaft to an accurate plug-gage fit.

FROM START TO FINISH...

Every Element of Production is Faster

THE occasional job usually is the one that causes the most headaches, often requires the greatest amount of time to complete, and in general ties up the productive capacity of the machine tool. Any feature that simplifies the production of these once-in-a-blue-moon jobs — perhaps the one part needed for an important machine on the assembly floor — speeds deliveries; saves valuable production hours.

Such a feature is illustrated above — the hinged Internal Grinding Attachment (standard equipment) on a CINCINNATI 12" Hydraulic Universal Grinder. Essentially a precision center-type machine, it has many features of built-in skill for

conventional work and, in addition, internal jobs can be handled in a routine manner and with no set-up delay.

The Internal Grinding Attachment may be set up by merely swinging it down and tightening one bolt. Even a new man can do this without supervision.

All the features of the CINCINNATI 12" Hydraulic Universal are illustrated in catalog G-455, "Better Grinding in Your Tool Room". Write for your copy today or look in Sweets catalog file for mechanical industries for a brief description.



CINCINNATI GRINDERS INCORPORATED CINCINNATI OHIO U.S.A.

CENTERTYPE GRINDING MACHINES... CENTERLESS GRINDING MACHINES... CENTERLESS LAPPING MACHINES

tion in view of a continually growing list of critical materials, the railroads have made more progress than is generally known to conserve material, a fact partially reflected in their ability to slash 1942 steel requirements. Its broad program involves substitutes, conservation and changed specifications. The special Purchasing Committee of the railroads, prior to submission to defense agencies of steel needs for 1942, reviewed the reports of the Mechanical and Engineering Divisions of the Association of American Railroads. These reports outlined steps that are being taken to conserve materials as a result of which the special Purchasing Committee initiated a procedure whereby careful estimates could be made of the total quantity of critical material needed during the current year, not only for direct use by the railroads but also by the suppliers of essential railroad materials and equipment.

Among the various materials that have been considered are:

ALUMINUM, asbestos, antimony, brass, cadmium, chromium, cobalt, copper, lead, manganese, mercury, molybdenum,

monel metal, nickel, phosphor bronze, phosphor copper, rubber, tin, titanium, vanadium, and zinc.

The carriers say that a means for substantial saving in the use of copper has been achieved by redesigning and changing the specifications of freight car journal bearings, which it is estimated, will save from 8 to 10 of the total copper used in journal bearings, or about 6,000,000 lb. a year. Railroads have also agreed to accept steel products without the usual copper content, which, based on the steel required in 1942, will, according to the railroads, make an additional saving of 3,600,000 lb. of copper.

Sherwood Executive Officer In WPB Industry Division

Washington

• • • Sidney Sherwood, at one time engaged in credit work for the Bankers' Trust Co., New York, and mine management for the Phelps-Dodge Corp. in Bisbee, Ariz., has been appointed as executive officer of WPB's Division of Industry Operations. Prior to his present appointment, Mr. Sherwood was assistant liaison officer of OEM.

War Conversion Asked Of Typewriter Industry

Washington

• • • The typewriter industry has joined the growing number of peacetime producers that are being converted to war output. It has been asked by WPB to cut production of its machines, of which well over 100,000 were built in 1941, so that its facilities can be freed for the manufacture of such items as small arms ammunition, primers, fire control instruments, fuses, rifles, pistols and parts for aviation instruments. Some typewriter makers already are producing these items on a modest scale, WPB said.

Exact orders are to be drafted later after conferences between the WPB and members of an industrial committee to be named by all of the typewriter manufacturing companies.

Among those representing WPB were William H. Harrison, director of the Production Division, J. S. Knowlson, director of Industry Operations, Philip D. Reed, chief of the Bureau of Industry Branches, and members of their staffs. Army Ordnance officers and representatives of other government agencies also participated.

In asking the typewriter industry to convert to the greatest possible degree for war production, the WPB suggested as a basis for consideration a tentative quota of typewriter production that would cut by 20 to 25 per cent the number of "standard" machines to be made during the next three months as compared with the number made during the same period of 1941. A reduction of about 40 per cent in the "standard" type of machines and about 80 per cent in the portable type was suggested to take effect ultimately.

Minimum Wage Hearing Set For Structural Industry

• • • A minimum wage hearing for the structural steel fabricating industry will be held on Feb. 26 by the Public Contracts Board of the Department of Labor, in Washington. Under the Walsh-Healey Public Contracts Act, passed in 1936, recipients of Government contracts must fulfill minimum wage requirements.

THE BULL OF THE WOODS

BY J. R. WILLIAMS



For Rush Tooling Braze Your Own Carboloy Tools

When you need tools in a hurry—when a job demands immediate tooling—mill, braze and grind your own Carboloy tools! Three simple operations, done in your own tool room—and the tool is on the job. It's *fast*—less than an hour is required for most single-point, straight-shank tools.



It eliminates ordering time and "hold-ups" awaiting deliveries.

Keep a stock of Carboloy Standard blanks in your tool crib . . . ready at a moment's notice to make up tools. You simply recess a shank to accommodate the Carboloy blank—braze in the blank—and grind the brazed tool.



Typical Carboloy tools made by a brass goods manufacturer.

With these three simple steps you're prepared to meet emergency tooling immediately.

A new 32-page Carboloy Tool Manual, No. GT-133, shows you exactly how to do the job and also



STANDARD
CARBOLOY
BLANKS

65 SIZES
2 STYLES
3 GRADES

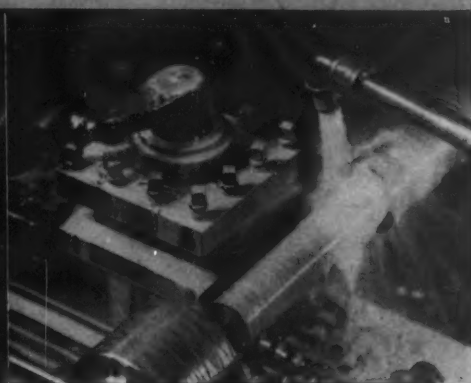


contains data essential for subsequent use and maintenance. This manual, with Carboloy Standard Tool and Blank Catalog, No. GT-140, listing Carboloy Standard Blanks—65 sizes, 2 styles, 3 grades—sent upon request.

When You Use Coolant with Carbide Tools — Use **PLENTY** of It!! —



A weak stream of coolant is ineffective and results in reduced tool life.

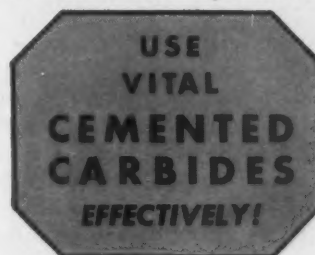


An ample volume of coolant at high velocity carries away heat rapidly and continuously.

TO INSURE best results when you use coolants with cemented carbide tools, always provide an ample flow of sufficient volume and velocity to reach, and adequately cool, the cutting edge of the tool. A weak, thin stream may often do more harm than good since the high speeds used with carbide tools—usually above 200 feet per minute—may cause most of the coolant to be carried away from the work before it reaches the point of the tool.

If you want to provide best possible conditions for efficient use of coolants do these two things:

1. Make sure that coolant pump, tank, and supply pipes are of sufficient capacity to maintain large flow at high velocity *without appreciable rise in coolant temperature.*
2. Make sure that coolant is actually reaching the cutting edge of the tool by providing adequate velocity and directing flow along an unobstructed path directly towards point of tool.



For complete details and sketches, consult page 20 of Carboloy Tool Manual No. GT-133, available upon request, without obligation.

CARBOLOY COMPANY, INC.

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CARBOLOY

FOR THE MANUFACTURING • MINING • TRANSPORTATION • CONSTRUCTION INDUSTRIES

CEMENTED

TOOLS • DIES • DRESSERS

CORE BITS • MASONRY DRILLS

• WEAR RESISTANT PARTS •

CARBIDES

WEST COAST.

• Pacific warehouses gravely short of plates, structural shapes, sheets . . . Stocks believed 25 per cent below year ago . . . Vital farm equipment cannot be obtained under present priority system.



SAN FRANCISCO—West Coast steel warehouse stocks, the grease which has kept shipyards, aircraft plants, and direct war machinery running smoothly while awaiting direct shipments from the East, are now reduced to a point of almost complete ineffectiveness.

The warehouse situation on the Coast is more grave than in other parts of the country largely because they have borne the brunt of getting completely new industrial production under way. Because steel producers on the Coast are so few, large steel users are unable to apply directly to mills for emergency requirements when time is too short to bring supplies from the East. A triple-A priority is more than a rumor here.

In the industrial centers at least, warehouse stocks are almost scoured clean of plates, structural shapes, and hot rolled sheets. In other classifications, the situation is not much better. It would be an over-statement to say that stocks now, taken as a whole, average 25 per cent of one year ago. That 25 per cent—if the figure is that large—represents odd items and sizes rather than those for which there is a constant demand.

Thus, warehouses will be unable to continue to render much fur-

ther first aid service. Their A-9 priority rating is insufficient to replenish stocks. Even were some provision to be made now by which stocks could be replenished in proportion to high rated orders filled, the warehouses would be aided little. Their present stocks would not enable them to fill a sufficient volume of high rated orders to get back to anywhere near a normal condition. In other words, they would be faced with the problem of doing business with a constant stock about one-quarter or less of normal even though all orders to be filled from now on were high rated.

This role of the warehouses as buffers for war industries is not cast in any fairy tale play. Shipyard purchasing agents have more than once told *THE IRON AGE* of constant scouting crews searching for vital minor materials to enable them to keep going, and freely acknowledge that launchings have only been possible because of the warehouses.

The steel warehouses in agricultural districts have their problems too. Although Department of Agriculture publicity has reiterated that farmers should be able to purchase wire fencing, barbed wire, bale ties, and other miscellaneous items without the aid of priorities, commerce in these classifications has been limited. Most warehouses are unwilling to sell for fear the A-9 priority rating will not enable them to replenish their stock. The A-3 limited priority rating given farm equipment manufacturers on material purchases gives recognition to the importance of farmers to the war effort, but no means has yet been worked out to recognize this importance in the form of a direct rating.

LACK of familiarity with the agricultural problems of this section of the country by the Priorities Division has contributed still more to their lack of prestige here. From the time of his birth, every California native has it constantly driven home to him that the basis of agriculture is irrigation. Crops could not grow in the long dry summer were not stored water or water from wells pumped through the fields. At the present

time there are approximately 68,638 farm irrigation pumping plants supplying water for over two million acres of farm land. In the year 1940 there were 2203 complete new deep well turbine pumps sold for agriculture in California, and this demand promises to be more or less stable. Yet, in allotting production percentages on which ratings were assigned for the manufacture of farm equipment, irrigation pumps were overlooked entirely. This was explained unofficially by the statement that the Priorities Division harbored the belief that "California farm irrigation was taken care of by recognized public irrigation districts."

A similar grievous error occurred through failure to include in the farm machinery production allotment provision for the manufacture of track-type tractors for agriculture. Apparently the Priorities Division representatives concerned had seen only wheel type tractors operating in Midwestern fields and has assumed that if wheel tractors were good enough for that part of the country, they were good enough for the Coast. As a matter of fact, track-type tractors were first developed because this type of propulsion was the only one that could operate in rice fields, delta peat soils, and on steep hillsides which abound in the far Western agricultural regions. The use of the track-type tractor in construction work was a later development. Track-type tractors represent about 50 per cent of the tractor horsepower on the Pacific slope, yet the farm equipment rating order made no provision for their manufacture for agriculture or even for the manufacture of parts for existing units in agriculture.

These sins of omission in providing agriculture with necessary equipment represent only the whey of dissatisfaction with priorities administration in the far West. Major manufacturers able to support a Washington representative have long since given up trying to deal through field priority offices. Call it an inferiority complex if you will, the feeling that the far Western part of the country has become a "colonial possession" has been heightened by the intense concen-

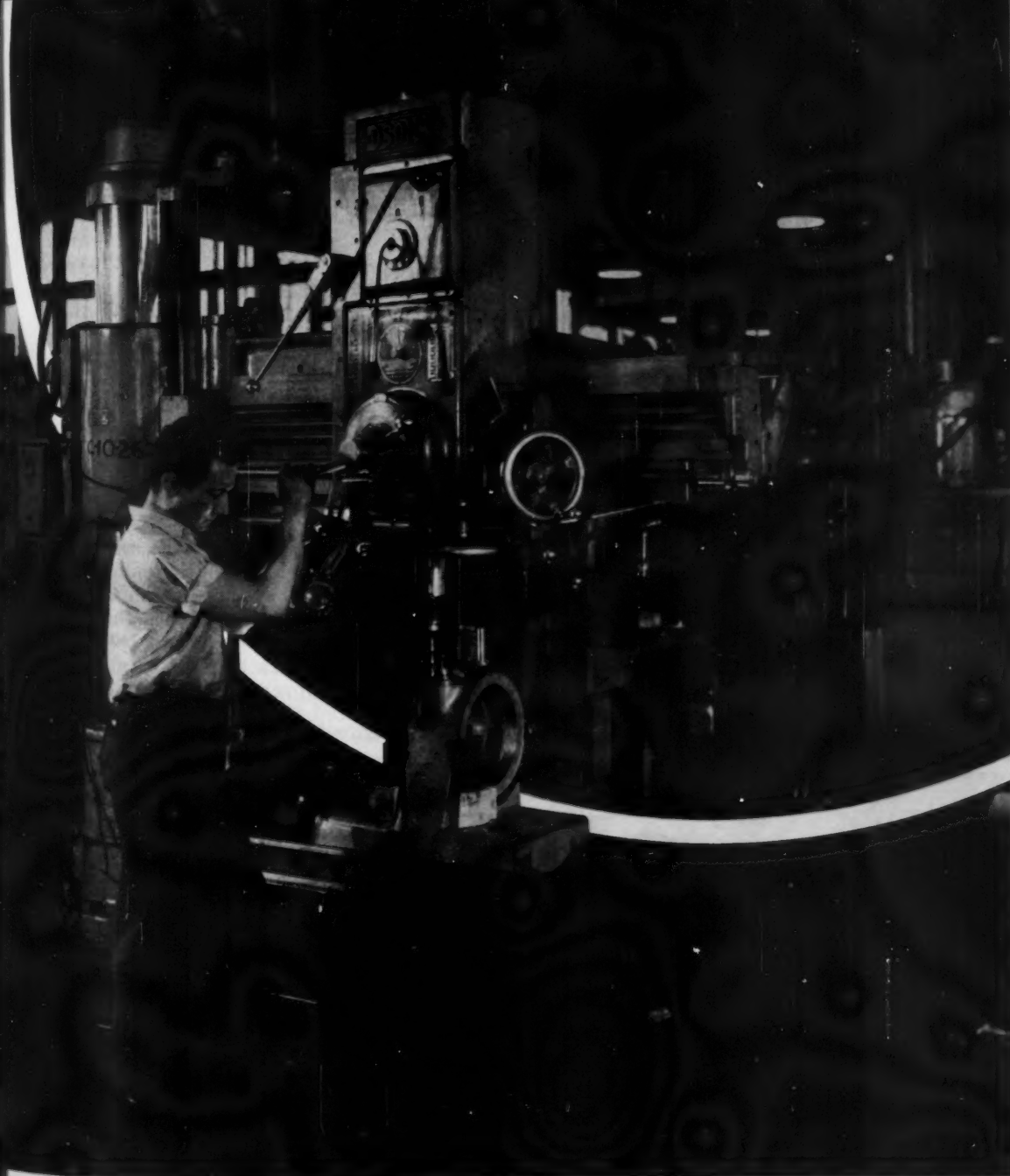
It's
**EASY TO
OPERATE**
the

• Just a glance at the head of this Fosdick Radial shows you why it is easy to operate. The centralization of all operating levers in the head—the design of the levers facilitates quick change of feeds and speeds—the convenient arrangement of hand wheels—all make for efficient and easy operation with minimum fatigue of operator.

This Fosdick Radial is drilling four (4) $\frac{1}{2}$ inch holes in this cast iron wheel head casting for the Sheffield Thread Grinding Machine.

All around utility and wide range adaptability is the main function of Fosdick Radial and Sheffield is taking advantage of these features to step-up production of machines vital to defense.

FOSDICK RADIAL



If the job can be done on a Radial it can be done in a Fosdick. Want details? Write for Radial Drill Bulletin—R.A.

FOSDICK MACHINE TOOL COMPANY
CINCINNATI . . . OHIO

tration of the power of emergency agencies in Washington, D. C.

EXECUTIVES and, in fact, the entire personnel of field priority offices command respect for ability and eagerness to serve. No criticism has been heard of the extremely courteous and prompt cooperation by local priority officials with all who seek their services. Apparently, however, the Washington executives of the Priorities Division hold the opinion that the country is as unified in its problems as in its determination to win the war. Criticism by a metal trade association executive of field priority offices as little more than "second-hand information centers" seems substantiated by more widespread failure to even query field offices on matters of interpretation. It is a small matter for an Eastern manufacturer to make a trip to Washington, but it is a matter of several days for a Westerner to make this hegira, in person or by message. Time, as the WPB likes to proclaim, is short, but the failure to place any power of action in regional officials is not making it any longer.

INTRODUCTION of women workers into the aircraft industry is being seriously hampered by existing state labor laws in California. If airplane production goals are to be met, a greater proportion of women workers will be necessary. The California law

provides a maximum 48-hr. work week, and requires time and one-half pay for women working on late night shifts.

Seriousness of the situation was emphasized last week by David Babcock, chairman of the WPB's Los Angeles Area Labor Supply Committee who said that a relaxation of the eight hour work day law and the time and one-half rule for late night shifts was urgently needed.

"We are desperately trying to get these two requirements changed so women can work a nine hour day until we can get the three shift day started, in order that women can be employed on the same basis as men on late night shifts. We do not want to break down social standards. These changes would only be temporary to meet the emergency."

Rather than cooperate with the aircraft industry, labor representatives are endeavoring to have restriction on women workers tightened still further. Rather than lengthen the 48-hr. maximum week, unions are asking a 40-hr. basic week with time and one-half for the extra eight hours and a complete ban on the eleven p. m. to six a. m. shift for women.

Labor's side of the story is that between four and five thousand workers lost their jobs in southern California when the assembly of automobiles, and the manufacture of tires and related automotive parts was discontinued and that an

additional three thousand building construction workers, auto salesmen, and workers in industries curtailed because of material shortages and priorities are out of work. The unions feel that these workers should be absorbed before employment of women is increased.

FURTHER analysis of these idle workers, however, shows that about 50 per cent are unskilled, 40 to 45 per cent semi-skilled, and five to ten per cent skilled. Industry is providing jobs rapidly for all of these workers and training programs are entirely adequate to inculcate the necessary skills.

Seventy-five hundred workers are a mere drop in the bucket compared to the foreseeable needs of the aircraft plants. Women workers are now recognized as not only capable in many types of work, but as definitely superior in certain operations requiring patience and dexterity.

Meanwhile, not only in Los Angeles but in the Pacific Northwest and San Francisco Bay areas, shipyards are not only taking all the unemployed, but are raiding the ranks of low salaried office workers. Portland shipyards contemplate the addition of 32,000 men to the payrolls which will lift the shipbuilding total there to 54,000 men. This will for the time being surpass lumbering as Oregon's greatest industry.

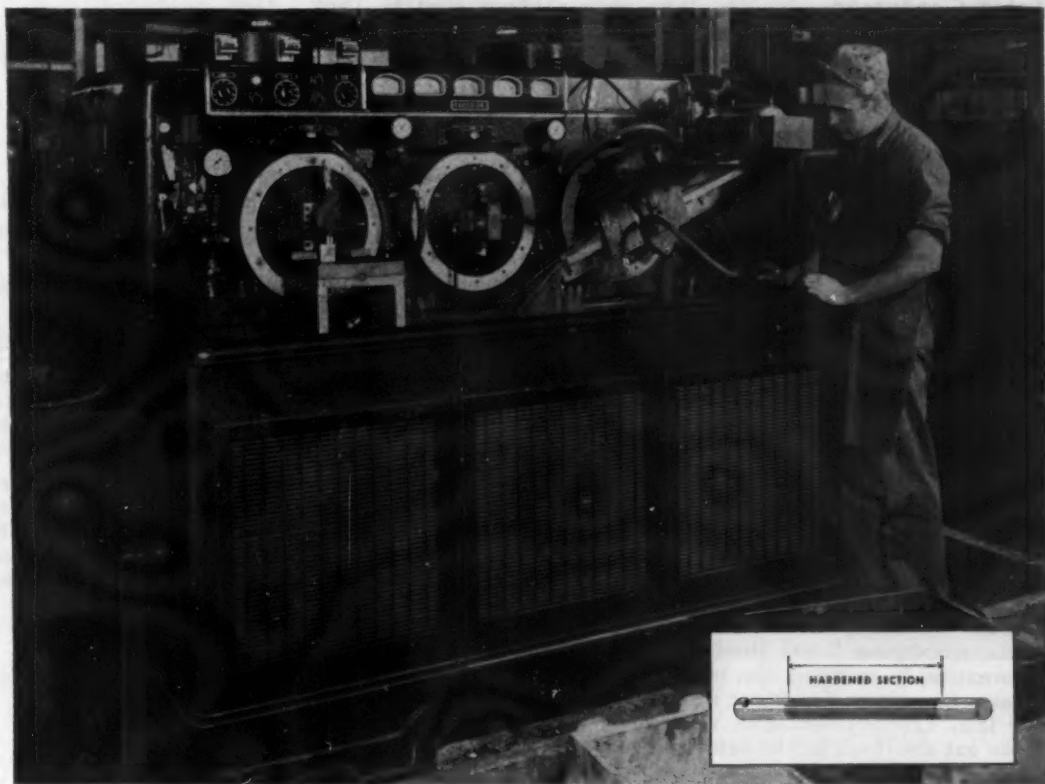
Next principality in the ever expanding Henry J. Kaiser industrial empire will be a 32 million dollar refinery near Los Angeles for the production of elements to be used in the manufacture of synthetic rubber if government financing can be secured, it is reported there. The Kaiser interests, according to the story, proposed to build a butadiene and styrene plant which will be supplemented by a 12 million dollar government-owned plant to make rubber. Raw materials would be supplied by the adjacent California oil industry.

3 Million See Steel Film

• • • Approximately three million persons during 1941 attended showings of United States Steel Corp.'s educational films depicting the making of steel, representing an increase of 16 per cent over 1940. The films were projected 30,000 times.

FOR HIROHITO: A New Year's greeting to Emperor Hirohito is this Douglas attack bomber—the first off the Long Beach black-out plant assembly line in 1942.





TOCCO HARDENS 120 SHAFTS PER HOUR

• At Caterpillar Tractor Company, Peoria, Ill., TOCCO Induction Heat-Treating surface hardens 2-pound gear-shifter fork shafts at the rate of 120 per hour.

Hardening is localized to a length of 9" out of total 12" and to a depth of .090" to .110". Minimum hardness 60 Rockwell C. Steel is S.A.E. 1045.

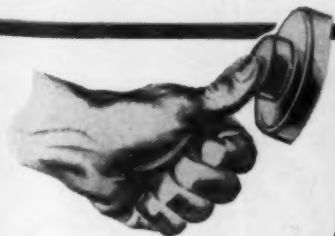
Why not see how TOCCO . . . the *automatic* heat-treating process can improve *your* production. We're at your service. No obligation.

THE OHIO CRANKSHAFT COMPANY • Cleveland, Ohio

HOW TOCCO CAN HELP SOLVE YOUR PROBLEMS

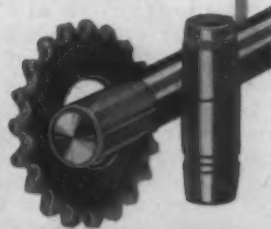
1. Cuts heat-treating hours to seconds
2. Simple push-button operation.
3. Eliminates 5 to 10 operations.
4. Hardens wearing surface only
5. — to any depth—any area
6. —every job uniform.
7. Retains ductility of core.
8. No distortion. No scaling.
9. Safe. Clean. Compact.
10. For hardening or heating wide variety of parts

SPEEDY ELECTRIC HEAT IS GENERATED WITHIN
THE SECTION TO BE HEAT-TREATED



TOCCO

World's Fastest, Most Accurate Heat-Treating Process



Fatigue Cracks

BY A. H. DIX

Cognomen—Extra Condensed

• • • Askance is how our Miss McSorley looked at a check that came in the other day from Geo. Rahmann & Co., New York City belt manufacturer, for in the place where the signature should be there appeared to be a penmanship exercise.

To be on the safe side, we telephoned the company before depositing the check. "It's O.K.," we were told, "A. H. Rahmann always signs checks that way and it always arouses comment." If you raise the signature to eye level and sight it edge on you will see that every stroke has a meaning of its own.



Cancelled Czech

• • • Which reminds us that months have gone by since anyone has written us that he gave a check for a subscription to a heavy-set, affable gentleman, or a thin, saturnine gentleman, and why isn't he getting his copies? In these instances it usually develops that the h. a. g. or the t. s. g. is promoting his own private share-the-wealth plan.

In the spring the circulation Robin Hoods will be coming out of hibernation, so to avoid loss, on the off-chance that the man who calls on you is not a genuine, blown-in-the-bottle Iron Age representative, we recommend that you make out the check in the name of THE IRON AGE. Then if it is falsely endorsed and cashed, the firm or individual that honors it has to make it good.

That, we believe, is the law in most areas. Only the other day the Argus-eyed "Deac" sent us a clipping reporting the victory of our subscriber, the Fitzgibbons Boiler Co., in a court case involving improperly endorsed checks. But the legal aspects of the case did not interest "Deac." He sent us the clipping only because a quirk in the mind of one of the New York *Herald-Tribune* linotypers caused one of the judges to be quoted as saying, "... could not have obtained the czechs."

Mme. Munitions

• • • IRON AGE subscriptions in the name of members of the tougher sex are as scarce as pork stores in Palestine. So we blinked when we saw one come through the other day for a Mrs. Nickers Armstrong, Manchester, England.

We looked up the order. It was from Moore-Cottrell, the subscription agency, and read "Mrs. Nickers Armstrong" all right. But we took a chance and changed it to "Messrs. Vickers Armstrong" and hope we did right.

Torture by Tire

• • • If we were as wealthy as the *Satevepost* or the *Time-Life-Fortune* outfit we would hire a big investigating agency like Professor Gallup's to trot around and see how many copies of last week's issue are tear-stained on page 101.

This page has an ad of the Dings Magnetic Separator Co., headed "Scheduled for Reincarnation" and showing a photograph of a truckload of scrapped automobile tires, ready to be reclaimed. At least half the tires have plenty of tread pattern left. As our own right rear tire is already as bald as an eggplant, the picture brought tears to our eyes and made our mouth water so much that we slavered all over the page.

That second one from the top in the nearest pile—do you think, Mr. Dings, you could get them to hold it out for us?

Two Hearts That . . .

• • • Perhaps you noticed the headline twins in last week's issue: On page 144 The Nitrallloy Corp. says "Produce Them Fast—But Make Them Last." Eight pages later on SKF tells you to "Make 'Em Fast But Make 'Em Good!"

New Rostrum For You

• • • Your favorite family journal, which sooner or later thinks of everything, has now provided you with a soapbox from which you can address the industry. The soapbox is, of course, the "Dear Editor" page, just two pages to the right of here.

Whenever the urge to express yourself gets out of hand, release your suppressions by writing to "Dear Editor." The editorial blue pencil barely touches the new page, so you may write uninhibitedly on any subject on which you are hot, cold, or tepid. The one requisite is that it be of general interest to the industry.

The only subject to which the "Dear Editor" page is allergic to is the digging up of buried trolley car tracks to use for scrap. Not that we have anything against the digging up of buried trolley car tracks to use for scrap. We are just tired of seeing the idea in print.

Throw in the Horse

• • • Speaking of scrap, this note from your Pittsburgh eyes and ears, Tom Campbell, is strictly sub rosa:

Scrap is so scarce they are melting everything they can get hold of. A recent contribution is, "If a dead horse has horseshoes on it, use the entire weight." But the best definition of heavy melting steel comes from Dan L——, "The test of heavy melting steel is when you lift it up with the electric magnet and then shut the power off to let it drop—if the wind doesn't blow it away it is heavy melting steel."

Ethics vs. Mathematics

• • • On Jan. 15 we printed a problem that called for the arrangement of 15 Christians and 15 heathens in such circular order that withdrawal of each ninth man, to lighten a sinking ship, would save all the Christians and drown all the heathens. Lt. Comdr. L. H. Benkhead, U.S.N., of the Puget Sound Navy Yard at Bremerton, Wash., objects:

The problem is impractical: If devised by the heathens it would undoubtedly have required all the Christians to be thrown overboard. If devised by the Christians the Christians (already saved) would undoubtedly have picked themselves out to be thrown overboard in order to save the heathens. If this were not the case they could not really have been Christians, thus violating the premise.

The point is well taken, but there should be some reward for a superior knowledge of mathematics. As it is, we cleaned the problem up a bit. Our puzzle book read "Christians and Turks," but this is no time to antagonize a possible ally. However, if we had it to do all over again we would make it read "Aryans and non-Aryans," in which case ethics could not be expected to rear its head and confound a purely mathematical problem.

Puzzles

The answer to last week's trifle is 2178.

Charles E. Morris, secretary of Kinfolks, Inc., cutlery manufacturer, says his die maker is responsible for this one. Par is seven minutes:

The radiator of an automobile has a capacity of four gallons and is filled with a 30 per cent anti-freeze solution. It is desired to increase the anti-freeze proportion to 50 per cent. How much of the 30 per cent solution must be taken out to permit a 50 per cent solution if refilled with undiluted anti-freeze?

The combination of unusual flexibility, exceptional ease of control and high economy gives the Hi-Lift Hoist a wide usefulness. Sturdy construction makes it always reliable.

The load, large or small, is under the accurate control of the operator. He can lift, carry and spot with precision.

Hi-Lift Hoists are in use in every type of industry—steel mills, automobile plants, foundries, machine shops, tool and die shops, paper mills, structural plants, power plants and many other places.

They are handling dies, castings, machinery, steel, paper, electrical material, automobile bodies and frames, lumber, stone, pipe, etc., at amazingly low costs, and with the high-lift feature are making better use of building space.

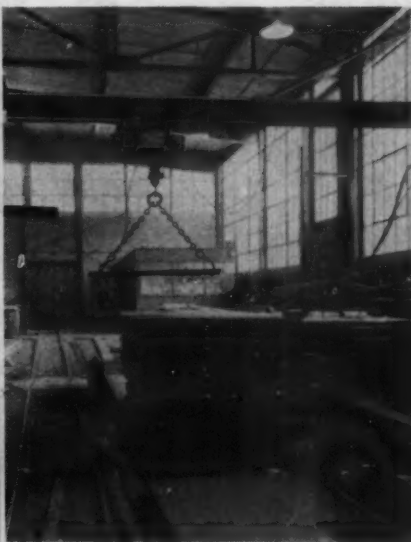
The Hi-Lift line is comprehensive—there is an economical unit to meet YOUR needs.

Northern **HI-LIFT HOISTS**

serve manufacturing,
storage and shipping
operations at less cost



NORTHERN ENGINEERING WORKS
2607 Atwater Street
Detroit, Michigan



Typical Installations of Northern Hi-Lift Hoists In Various Industries

Dear Editor:

BACK TO THE SOIL

Sir:

Being a small shop, in a small town, with no defense work, and little likelihood of ever getting any, because of our remote location and smallness, we have decided to have you stop **THE IRON AGE**—and thus save the \$6.00 required for its subscription.

There is nothing wrong with the magazine. We enjoy every issue—But **WHAT'S THE USE?** It's all over our head—far and beyond us. You've got to be big, in a big center, with big money and a big business to get anywhere. We have none of these advantages. So what?

At one time we did a nice export business, but shipped our little concrete mixers to all parts of the globe,—(and it was then that we learned world wide geography, which comes in handy now in listening to and reading of the great conflict raging all over the globe).

In World War I we had a very crude affair, a wood frame type mixer, crudely built. . . . As time went on, we improved the wood frame to a mortised and tenoned frame, and later to all steel, and trailer type with rubber tires and all. Now that we have a very much better machine, we find great difficulty in locating buyers—and we feel quite certain that no one would want a wood frame type, and wood barrel mixer now. Again we say—So What? This is a great corn and hog territory, and although the AAA is still holding us down on corn and hog production, we can still use part of our land for that, so perhaps after all we should abandon completely this machine shop idea, and go all out for something more in keeping with our community and its major occupations.

GEORGE C. SHELDON
Sheldon Mfg. Co.
Nehawka, Neb.

BLACK HEAT

Sir:

Some time ago you published an article regarding pellets to be used in measuring "black heat" in various kinds of welding work. Would you tell us the name of the firm making these pellets?

W. WALLACE McKAIG
Cumberland Steel Co.
Cumberland, Md.

• Mr. McKaig evidently has reference to Tempilsticks, made by Tempil Corp., 132 W. 22nd, New York, which were described in **THE IRON AGE**, July 24, 1941, p. 41.—Ed.

SMALL ARMS AMMUNITION

Sir:

Will you please send us six additional copies of the Jan. 8 article, "Small Arms Ammunition Manufacture."

S. M. HEIMLICH
Lewis Invisible Stitch Machine Co.,
St. Louis

• Demand for clippings of this and other articles in **THE IRON AGE** on shell and cartridge manufacture exhausted the supply. To meet the demand, we have reprinted articles on that subject published within the past year or so in the form of a 109-page booklet entitled, "Shell and Cartridge Manufacture." Copies are available at \$1.

BAR FEED ATTACHMENT

Sir:

Please advise us the names of manufacturers of bar feed attachments for turret lathes, apart from the actual makers of turret lathes. The matter is of great urgency.

M. B. GOLDBLATT
International Machinery Co.
Hamilton, Canada

• So far as we are able to determine, the only manufacturer of a bar feed attachment for turret lathes is W. C. Lipe Co., Inc., Syracuse, N. Y.—Ed.

GEAR CLEARANCE

Sir:

. . . We are interested in obtaining a table compiling data for gears with standard involute tooth form within 30 and 200 diametral pitch. . . .

HANS LOEN
Bendix Aviation Corp.
Philadelphia

• The data is contained in a report on "Clearance for Fine Pitch Gears as Generated with Cutters of Rack Tooth Form," published by the American Gear Manufacturer's Association, Wilkinsburg, Pa.—Ed.

ERROR IN TAXES

Sir:

In your issue of last week you carried a paragraph . . . stating that this company's provision for Federal income, excess profits and state income taxes totaled \$1,668,100 for the year (1941). This is an error, the correct figure for taxes is \$5,387,400.

M. K. SCHNURR
Rustless Iron & Steel Corp.
Baltimore

SILVER PLATING

Sir:

We are very much interested in the articles about silver by Adolph Bregman.

M. ROSENTHAL
Resillo Co.
Chicago

Sir:

In your Nov. 20 issue there was an article by Adolph Bregman entitled "Silver to Replace Nickel and Chrome Plate." Apparently this was the second article. Can you assist us by sending us both articles?

J. E. BAER
Everedy Co.
Frederick, Md.

• Mr. Bregman has rung the bell again. The demand for the four articles on silver plating has been so heavy we have had to make reprints. Copies of the reprints, containing all four articles, are available at 25c. (stamps, please) from **THE IRON AGE**, 100 E. 42nd Street, New York.

TILL WE MEET AGAIN

Sir:

Please cancel our subscription. We have enjoyed your publication, but present conditions have nearly closed our plant and we are forced to curtail in all directions. Will be looking forward to the day when we can again join your list of subscribers.

A. M. ADAMS
Adams Manufacturing Co.
Waukesha, Wis.

SHELL BANDING

Sir:

We would appreciate receiving from you a list of names of manufacturers of shell banding equipment similar to that made by the West Tire Setter Co.

J. P. STAPLETON
Oatis-Booth Machinery Co.
Toledo

• As far as we know, the West Tire Setter Co. is the only maker of such equipment. During the last war several American and Canadian shell makers built such special machines for their own use.—Ed.

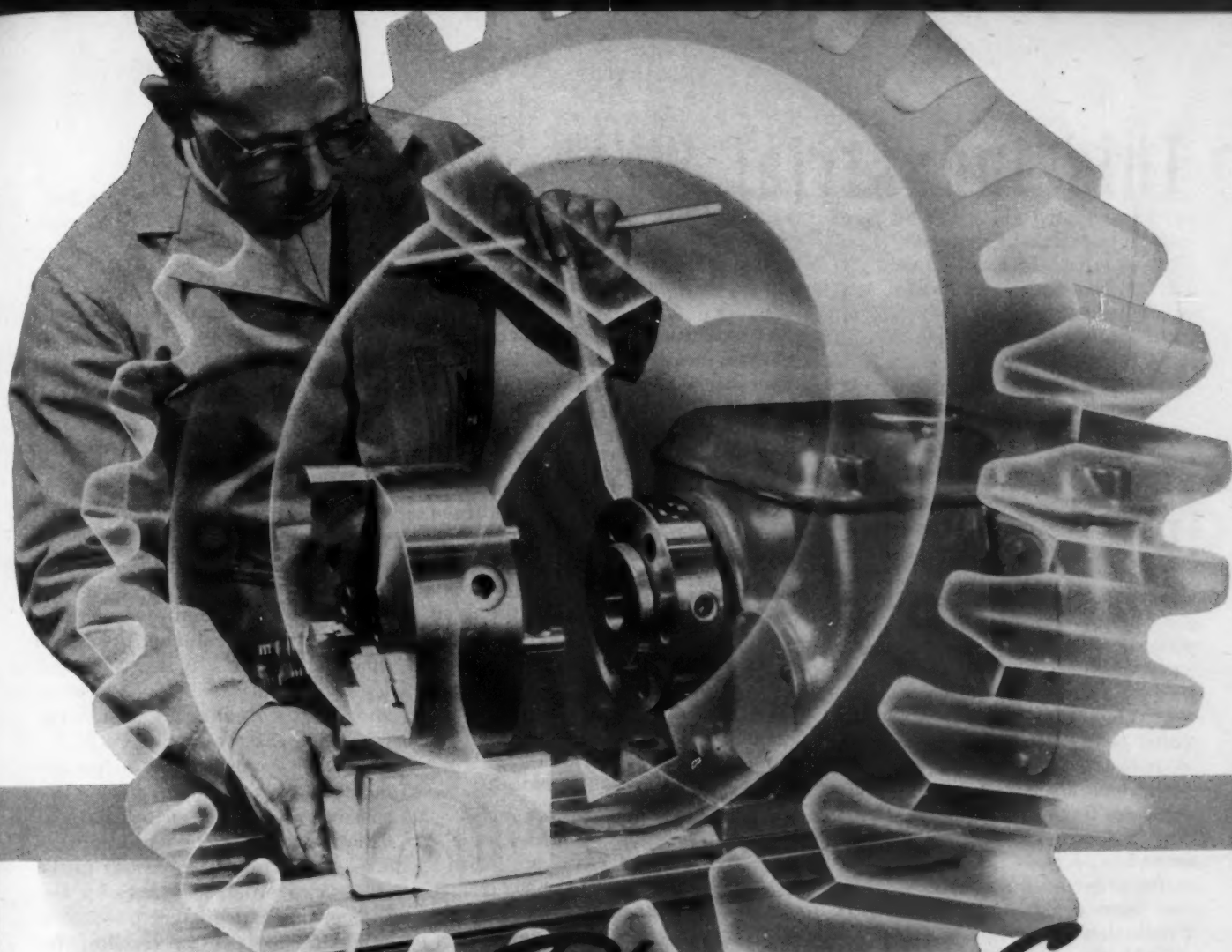
TOOL STEEL CHART

Sir:

In your Aug. 28 issue is a chart, "Comparable Tool Steel Grades." We have two copies which prove of great value to us. We can very conveniently use four more. . . .

L. C. CASE
Eaton Mfg. Co., Wilcox-Rich Div.,
Saginaw, Mich.

• Reprints of the chart are available at 15c. each.—Ed.



GIVE CREDIT TO THE

Phantom Gear

FOR SPINDLE NOSE IMPROVEMENTS

SINCE Monarch first adopted the flanged spindle nose, its superior utility has been apparent. With the later introduction of the CamLock mechanism, affording quick and accurate mounting and interchangeability of chucks and fixtures, the lathe's usefulness curve took a sharp upward turn. Monarch users find that these features enable them to obtain faster and more accurate operation in tool-room and production.

The continuous flow of improvements sponsored by Monarch men streams from their endless desire to build better and more useful lathes. At Monarch, we call this urging force

"The Phantom Gear." From it comes to our engineers the inspiration for new and more efficient designs, and to our plant personnel the stimulus to supply more accurate, more sturdy, more productive machines.

★ ★ ★

Today, "The Phantom Gear" spurs us on to deliver a constantly increasing number of lathes for National Defense. And when the emergency is over, it will continue to inspire the building of still better lathes, to help American industry produce more goods for more people, at lower cost.

THE MONARCH MACHINE TOOL COMPANY . . . SIDNEY · OHIO

MONARCH



LATHES

COVER THE TURNING FIELD

Monarch's March of Progress

Monarch builds only lathes, which is one of the reasons why many of the most important lathe advances come from Monarch, such as:

Flanged spindle nose

Anti-friction bearing mountings for all rotating parts

Helical geared headstock

Automatic force feed lubrication

Anti-friction bearing taper attachment

Flame-Hardened beds

Automatic sizing for all size lathes

Even under the present delivery pressure, we are building better lathes than ever before. Now and in the future it will pay you to watch Monarch's developments.

This Industrial Week . . .

EFFORTS of machine tool builders to expand capacity to meet the deluge of war plant orders appeared this week to be heading toward complete allocation of the machine tool industry's output.

By March 1, some observers predict, an allocation system for machine tools will have been set up. A part allocation of used machine tools has already been put into force by General Preference Order No. E-4 whereby certain critical second-hand tools can be frozen by a stop order until a preferred buyer has been designated by the War Production Board.

That the extraordinary success with which machine tool makers have been spiraling capacity in the last year has not been fully capitalized on by war agencies is shown by reports that in some cases new machine tools are going into warehouses because the federal defense agencies have not been able

to obtain enough contractors to use them.

Against a backdrop of dangerous developments in the Far East, the metalworking industry heard new warnings that the urgency of the need for greater war implement production can hardly be exaggerated. At Pittsburgh, William L. Batt, WPB materials chief, warned businessmen that they may have to sacrifice everything that does not contribute to the victory program. Throwing aside a speech prepared for a dinner of the Engineers Society of Pennsylvania, Batt declared that this country has a "desperate" shortage of some materials although it is the world's greatest producer.

Prices and Wages Make Headlines

Among results of the shortages may be a channeling of civilian industry orders. At Washington it is expected that the War Production Board will soon—on a selective basis—direct essential civilian orders to certain companies which may be ordered to operate their plants on such orders at full capacity, instead of at 60 per cent or some other low figure.

An interesting point on which the

War Production Board soon may rule is whether manufacturers have vested interests in quotas assigned to them by the board and may sell or otherwise deal in such quotas.

Prices and wages rated high this week as topics of news in the steel and allied industries. To an inquiry from the Navy department as to the course of steel prices on its purchases, the Office of Price Administration replied that it "does not now foresee general changes in the prices of steel mill products affecting deliveries during the second quarter of 1942." A long term policy on steel prices is to be discussed shortly at a meeting of steel industry representatives with OPA.

In the meantime, OPA has announced revisions in steel price schedule No. 6 on such points as dislocated tonnage, extras and lend-lease prices. New provisions in the steel price order set prices on seconds or off-grade material, establish a maximum price on rerolling ingots and establish a formula for fixing lend-lease prices. The OPA has ruled that steel contracts not conforming to the price schedule, and entered into prior to April 16, 1941, must now be completed by not later than March 15. Up to now such contracts have had no time limit. A new definition of dislocated tonnage provides that the tonnage must arise directly from the war effort and be shipped outside of the usual market area of the shipping mill, before the so-called emergency basing point may be used.

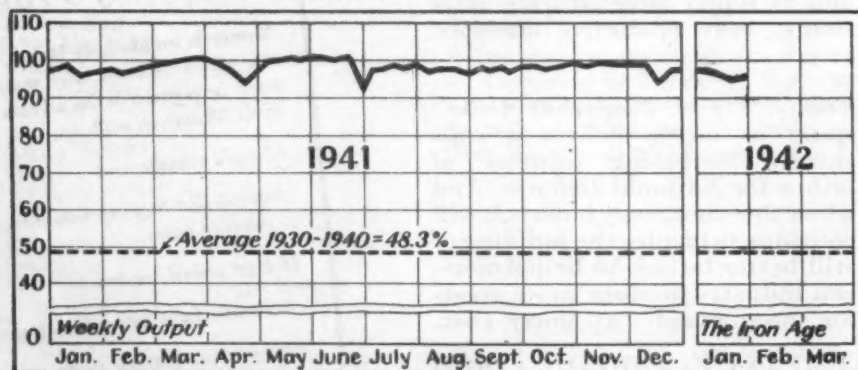
(Full details of the revisions in Iron and Steel Products Schedule No. 6 are carried on page 89 of this issue of THE IRON AGE. Highlights of the schedule also appear in Section 2, which is devoted to prices, in this issue.)

While there is little prospect of increasing steel prices to meet higher costs, demands for higher steel wages are growing in strength. Negotiations over the Steel Workers Organizing Committee's request for a steel wage increase of \$1 a day have broken down.

"The union's disputes with various steel companies—linked with demands for the closed shop and

Steel Ingot Production—Per Cent of Capacity

(Open Hearth, Bessemer and Electric Ingots)



Steel Ingot Production, by Districts—Per Cent of Capacity

	Pittsburgh	Chicago	Youngstown	Philadelphia	Cleveland	Buffalo	Wheeling	Detroit	South-ern	S. Ohio	West-ern	St. Louis	East-ern	Aggregate
Current Week	97.0	102.5	97.0	90.5	95.0	90.0	88.0	107.5	90.0	106.0	97.0	81.0	105.0	97.5
Previous Week	96.0	103.0	97.0	90.5	98.0	92.5	88.0	106.0	95.5	104.0	96.0	75.0	106.0	98.5

dues checkoff—have been placed before the War Labor Board.”

Thus two problems for the board are bound up in the steel cases, (1) higher steel wages and the resulting effects on U. S. inflation and (2) establishment of the closed shop making union membership a condition of employment.

Henderson States His Position

Prevention of increased prices of steel is said to have been one reason for the surprising appearance of Price Administrator Leon Henderson before the War Labor Board last Friday in opposition to CIO demands for a \$1 a day increase in wages in steel and other industries. The board had invited Mr. Henderson to present his views on demands for wage increases. It is said that a letter stating this position was also sent by Mr. Henderson to the President and that the President read it to CIO and AFL leaders at a White House conference on the day that Henderson appeared before the board. The price administrator's position that he does not anticipate any general price increases is said to be based on the hope that wage increases can be prevented. Henderson said such increases would lead to inflation.

Ratings Growing Higher and Higher

The number and tonnage of war steel orders carrying AA to A-3 preference ratings have increased so rapidly in recent months that many steel companies see a complete blackout ahead for steel bookings covered by lower ratings unless these needs are handled by allocation. No central authority at Washington, it is believed, has accurate figures showing the overall distribution of steel orders at various priority levels. Some steel companies have found that more than 70 per cent of their rated backlogs carry ratings of A-3 or better.

One result of this unprecedented change in steel distribution (concentration or highly rated orders) must result in more allocations, according to some steel analysts. Priority ratings such as A-5 to A-10 are becoming ineffective since such tonnage is being pushed aside for more urgent war material. Compli-

cating the steel distributing problem are the gigantic shell program, the allocation of railroad maintenance of way supplies, the mandatory order to complete 36,000 freight cars by May 1, the great stepup in naval and merchant ship building and the herculean task of preparing buildings and equipment for an army of several million men.

The Navy Department recently requested bids for the manufacture of 50 million shells, requiring upwards of 80,000 tons of cold finished bar steel. Contracts for some of the shells have been placed and the remainder is expected to be allocated soon. Contractors bidding on this work have found that the Navy is permitted to allocate up to 100 per cent more than the original contract to any producer.

Mills Dropping Non-Defense Orders

Cancellations of non-defense orders continue to reach the mills with one company recently dropping several hundred thousand tons of such business. With allocations having already been made for steel to go into the new lake ore carriers, steel producers have received orders for the necessary bars to supplement shape and plate orders previously placed. An additional order has been placed for sheet steel to go into airplane landing mats. A definite decision in the case of tubing to be used in manufacture of airplane bombs has not been reached, with the Army apparently holding out for an unpopular size and the mills emphasizing the advisability of using a popular size.

Steel ingot production this week rose a point to 97.5 per cent of capacity, according to THE IRON AGE estimates, the highest level since the week before Christmas. This week's gain is due largely to resumption of melting in a number of openhearth which had been down for repairs, plus a slightly more plentiful supply of scrap in several areas which have been suffering from shortage of this material.

Pittsburgh district steel operations are up one point this week to 97 per cent of capacity while Cleveland gained seven points to 95 per cent, Birmingham rose 3.5 points to 99 per cent and Detroit climbed 1.5 per cent to 107.5 per cent. Southern Ohio is a point higher at

105 per cent and the St. Louis district advanced six points to 81 per cent. The big Chicago steel producing area dipped a half point to 102.5 per cent and Buffalo sagged 2.5 points lower at 90 per cent. Philadelphia is unchanged at 90.5 per cent while Wheeling remains at 88 per cent.

Wrecking Yard Prices Clarified

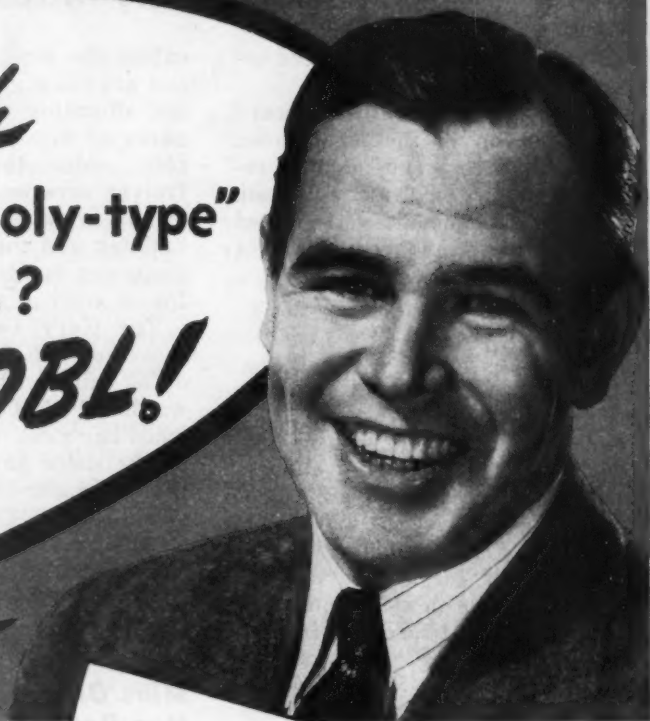
Several steel centers could lift operations if scrap supplies were ample. Prices of junked automobiles are to be governed by the steel scrap price schedule (see Price Schedule No. 4, Section Two of this issue of THE IRON AGE) after disclosure that auto wrecking yards are being purchased on a wide scale for immediate conversion of their scrap for steel plants. The resulting prepared scrap from auto wrecking yards must not exceed ceiling prices delivered to the mills, the OPA said. "Unprepared" scrap is now defined by the OPA to exclude objects requiring dismantling, such as bridges, box cars and junked automobiles.

January coke pig iron production dropped to 4,970,531 tons from the record total of 5,012,276 tons in December, 1941. Output slid from 161,686 tons a day in December to 160,340 tons in January. The January operating rate was 99.3 per cent compared with 101.2 per cent in December. There were 217 blast furnaces operating on Feb. 1, producing at the rate of 159,270 tons a day, compared with 216 in blast on Jan. 1 with a production rate of 162,140 tons.

Structural steel awards for the week are estimated at 25,000 tons, with new projects totaling 25,500 tons while reinforcing steel awards amount to 9450 tons with new projects at 19,410 tons.

Pointing up the predicament of non-integrated steel mills unable to obtain supplies is an announcement at Cleveland by Davey Steel Co. that sale of the company has been recommended to its stockholders. "With the finishing departments of the integrated steel companies working well below capacity, they are reluctant to ship steel out of their own plants to another finishing mill," Harry Berno, president, said in explaining the company's decision.

Which
 "low-tungsten" or "moly-type"
 HIGH SPEED STEEL?
That's easy... DBL!



**STANDARDIZE on this
 analysis...it identifies
 DBL High Speed Steel**

C	.75— .85
Cr	3.50—4.50
W	5.00—6.00
Mo	4.00—5.00
V	1.25—1.75

For "moly-type" cutting steels,
 or for working out solutions
 to your plant tooling problems,
 our Mill Service Staff is at
 your disposal. • Just write us.

Get these ADVANTAGES

- ★ DBL meets government tungsten conservation requirements; it contains less than $\frac{1}{4}$ as much tungsten as 18-4-1.
- ★ It matches or out-performs 18-4-1 in nine out of ten cases.
- ★ It heat-treats virtually the same as 18-4-1; requires no coating during hardening; does not de-carburize. No new equipment or methods are needed.
- ★ DBL weighs 8% less than 18-4-1; you get more tools per pound of steel.
- ★ Free patent license is offered, without time limit or other restrictions.

ALLEGHENY LUDLUM

STEEL CORPORATION

PITTSBURGH, PA.

Tool Steel Division



Watervliet, N.Y.

Allegheny Ludlum Steel Corporation
 Oliver Building, Pittsburgh, Penna.

T-214

Send me a copy of the "DBL Blue Sheet."

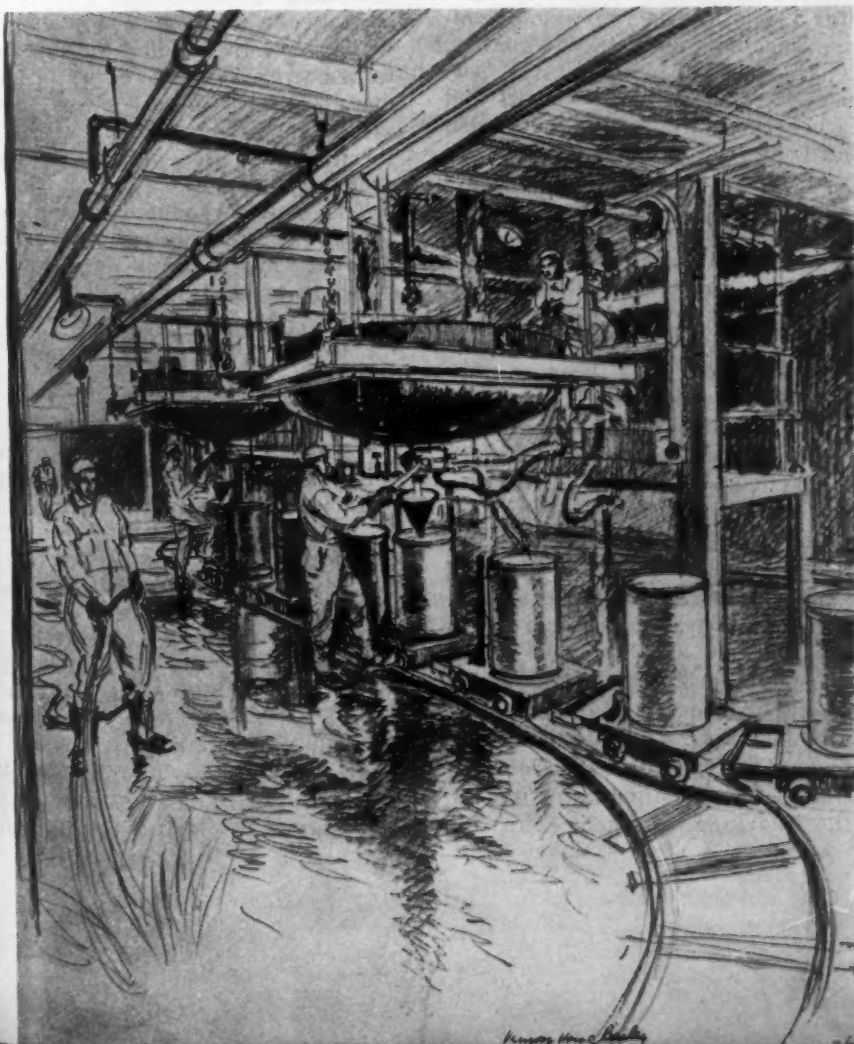
NAME _____

COMPANY _____

ADDRESS _____



TNT FOR HITLER: These Navy-authorized drawings by Vernon Howe Bailey show (top) the Navy aircraft carrier "Hornet" and at the Norfolk Navy yard (below) pouring of TNT for depth charges at the Naval Mine depot, Yorktown.



News of Industry

• • •

Steel Price Ceiling Revisions Cover Extras, Dislocated Tonnage

Washington

• • • Outstanding changes made in the revised Iron and Steel Products Price Schedule No. 6, announced last Thursday by Price Administrator Leon Henderson, relate to provisions regarding dislocated tonnage, extras, and lend-lease prices.

New provisions set maximum prices on seconds or off-grade material, fix a maximum level of \$31 a gross ton, f.o.b. mill on standard rerolling ingots and a formula for fixing lend-lease prices.

Another important change concerns contracts, which do not conform to the requirements of the schedule and had been entered into prior to April 16, 1941, calling for a price higher than the established maximum. Previously

OPA announced this week that price ceilings on steel mill products for second quarter delivery probably will be continued. Price Schedule No. 6 is in Section Two of this issue, in abstract form. The section also contains many steel mill base prices.

the completion of contracts had been allowed without any time limit. These contracts must now be completed by not later than March 15.

The new definition of "dislocated tonnage" provides that the tonnage must arise directly from the war effort and be shipped outside of the usual market area of the shipping mill, before the so-called emergency basing point may be used. The original schedule permitted the use of the basing point nearest the mill but did

not make clear when it should be used.

Where tonnage is dislocated the freight may be figured on the basing point nearest to the shipping mill (emergency basing point). In the twilight zones where mills customarily absorb some freight and become increasingly selective in their selling, the usual market area definition should be used to determine whether freight should be absorbed on a particular shipment. The usual market area is

Corp. subsidiaries or individual companies removes uncertainties heretofore existing. The old provisions generally were interpreted by the mills as published or quoted prices, although the language was such that it could have been construed to mean that the "in and out" type of extras was "out." That is to say, if a consumer was not being charged the extra on April 16, 1941, such extra could not be applied in the future. It can now be provided that it

such particular group or groups of buyers."

The clause providing that the maximum delivered price for all seconds or off-grade iron or steel products shall not exceed the maximum delivered price for comparable iron or steel products of prime quality is entirely new.

The formula for lend-lease steel which has basing point prices establishes a delivered ceiling made up of three factors: (1) the domestic basing point base price at the governing basing point, or at the emergency basing point; (2) applicable domestic or export extras; and (3) export transportation charges in effect at the time of shipment from the governing or emergency basing point to the place of delivery, as customarily computed.

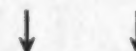
In the case of both lend-lease and export shipments the schedule permits calculation of freight from the emergency basing point.



Coke Schedule Altered

••• The byproduct coke price schedule, No. 29, was extensively revised last week. The amendment became effective Feb. 7. In effect the changes more or less generally permits certain pricing policies for which permission had to be obtained from OPA by sellers previously. Many special cases had arisen involving relationships in territories outside normal market areas of furnaces.

The new schedule's principal provisions are printed in Section Two of this issue, which is devoted to prices.



Changes in Lead

••• Minor changes in the price schedules for primary and secondary lead were announced Feb. 5 by OPA, effective Feb. 2. Primary lead is "lead in the form of pigs, ingots and other special shapes made from ores, concentrates or bullion, even though other material is mixed therewith, provided such other material accounts for 50 per cent or less of the lead content thereof."

Amendment No. 1 to Price Schedule No. 70 on secondary lead is designed to clarify its applica-

Recent Price Shuffles Are in Section 2 Of This Issue, Condensed and Tabulated

••• So many prices and price regulations have been changed in the last two weeks that *IRON AGE* decided to bring out the price compilation which is part of this issue and is designated Section Two.

Readers will find there in useful form, along with a directory of OPA officials, indexes, and other data, the following changes made last week:

Digest of revised orders covering mill steel, warehouse steel, etc.; revised scrap tables covering non-ferrous and iron and steel scrap; the new foundry coke schedule and others.

Reprints of this new price section (while they last) will be furnished on the following basis: One to 10 copies, 25c. each; 11 to 100 copies, 20c. each; 101 to 300 copies, 18c. each; 300 or more copies, 15c. each.

defined as that area into which the particular iron or steel product had, in the course of two years prior to April 16, 1941, been customarily shipped by such mill in quantities comparable to the shipment being made.

"... if in any case in which by reason of unusual circumstances arising directly from the emergency demands of the war program," says the revised dislocated tonnage clause, "a shipment of any product is made to a place which is not within the usual market area of the mill from which shipment is made, the emergency basing point may be used and transportation charges may be calculated from the emergency basing point to the place of delivery. Such transportation charges shall in no case exceed the actual cost of transportation on the shipment."

Previously no allowance was allowed on dislocated tonnage going into the Detroit arbitrary price area. Under the new definition the mills are permitted to make use of the dislocated tonnage provision.

Clarification of the extras provisions fixing published or quoted prices of the United States Steel

meets the definition of the applicable extra.

"... Provided, that in no case shall an extra or extras be charged for any processing, testing, chemical specifications, special quality, quantity, etc., unless these services are actually performed and are necessary in order to furnish an iron or steel product of a type and quality required to fabricate successfully the article in question or to meet the specifications of the purchaser," the revised schedule reads. Another revised clause says:

"... Provided that ... where any extra may have been so published or quoted (by U. S. Steel Corp. subsidiaries as of April 16, 1941) but had not been charged, in whole or part, by a producer for a specific application to a particular group or groups of buyers on April 16, 1941, or during the two years prior thereto, before such published extra may be charged or invoiced by such producer after March 15, 1942, to such particular group or groups of buyers such producer must apply for approval to and receive approval from the Office of Price Administration for the charging of such extra for

tion. More than 50 per cent of the lead content of secondary lead, which is defined to include secondary caking lead, must be obtained from scrap materials. A further clarification is made in the weight of shipments of battery lead plates. These are to be figured at the time the assay sample is taken. The assay made shall be used to determine the maximum price.

Copper Scrap Prices Added

••• Effective Feb. 27 Price Schedule 20, covering copper scrap will be on a new basis, with ceiling prices added for 24 additional items. The new lineup is shown in Section Two of this issue. The schedule as it stands at present appeared in THE IRON AGE Jan. 1, 1942.

Steel Resale Ordered Revised

••• Price Schedule 49, covering resale of steel, was reworded in many sections last week, clarifying some of the points which previously had been very difficult for warehouses and others affected by the order to understand. See Price Section (Section 2) for highlights of the revised schedule.

Change in Schedule 40

••• Effective Feb. 3, OPA has issued Amendment No. 2 to Price Schedule No. 40 for builders' hardware and insect screen cloth, changing the "freeze" period from the 30-day period preceding Oct. 20 to the 15 days preceding Oct. 15.

Fuel Oil Tank Prices

••• Manufacturers' prices at October, 1941, levels have been fixed as the maximums under Schedule 96, issued last week on domestic fuel oil storage tank prices. A delivered price to the contractor is established. OPA says it is substantially similar to prices prevailing during October, 1941. The effect of the action is to

fix jobber margins. Prices to contractors are set on the basis of three areas, Eastern area prices being on a delivered basis, with Midwestern and Pacific area prices on an f.o.b. basis.

Primary Zinc Definitions

••• Amendment No. 1 to Price Schedule 81, primary zinc slab, changes definitions and sets up new specifications, effective as of Feb. 2. The schedule appears in the special price section with this issue. Primary slab zinc is defined as "slab zinc made from ores or concentrates, even though other material is mixed therewith, provided such other material accounts for 50 per cent or less of the zinc content thereof, and must be produced by a process of distillation or by electrolysis."

Zinc Scrap Revisions

••• Amendment No. 3 to Price Schedule 3, zinc scrap, was issued Feb. 2, effective the same day. Definitions of what constitutes secondary slab zinc dovetail closely with clarifications in the primary zinc amendments. Maximum prices for secondary slab zinc have been amended to conform with grade differentials and quantity differentials of the primary zinc schedule.

Steel Castings Schedule

••• The steel castings schedule has been amended and ceilings provided for railroad specialties, effective Feb. 3. Maximums on railroad specialties, side frames, bolsters, couplers and yokes are fixed at levels reflecting price increases in the period between July and October of last year. The order was issued July 15, originally. The extensive list of railroad specialty prices was too long for inclusion in the special price section which accompanies this issue, but a digest of the revised wording of the order has been included. See Section Two.

Refrigerator Prices Set

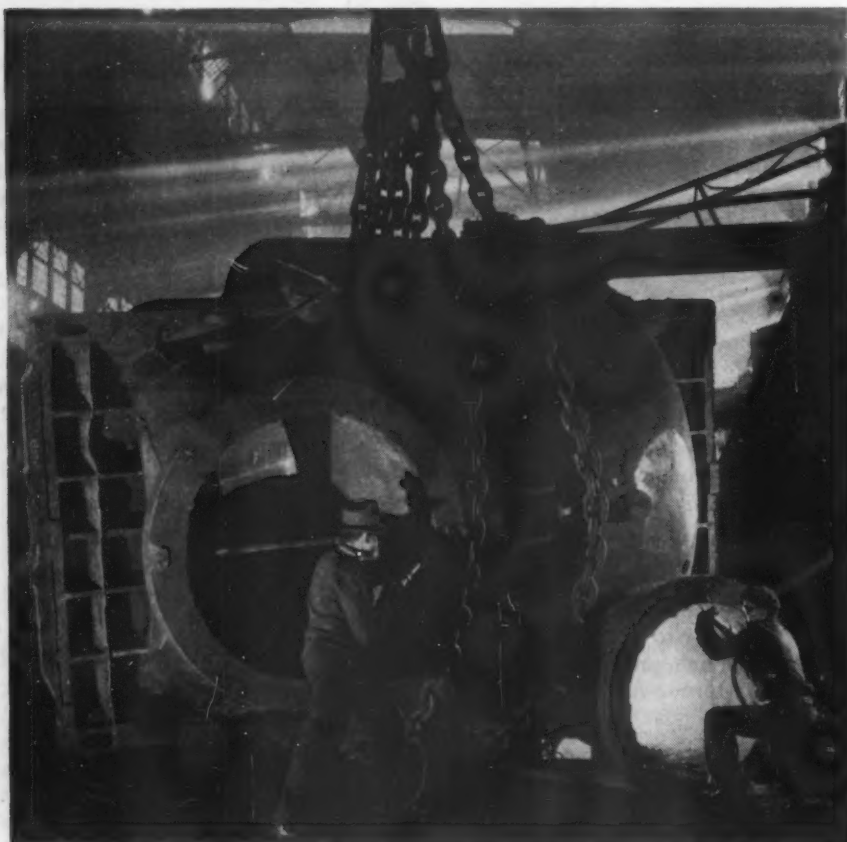
••• Existing prices for household mechanical refrigerators are established as the maximums that may be charged by manufacturers in a new price schedule issued late last week by OPA. The new schedule formalizes existing arrangements whereby all mechanical refrigerator makers, except General Electric Co. and Frigidaire had received OPA approval of their 1942 model lists. G.E. and Frigidaire had agreed with OPA to continue to sell at 1941 prices until required data for 1942 model prices were submitted for approval.

Cast Iron Soil Pipe Schedule

••• Under Schedule 100 issued late last week, effective Feb. 20, maximum prices for cast iron soil pipe and fittings are set. The order governs all sales by makers and distributors. The Birmingham basing point system is used. The minimum discount for 2-inch to 6-in. extra heavy pipe is 52½ points off list for carload shipments and 10-ton shipments by truck. Prices for other sizes and for fittings retain the same differentials as prevailed during the past six months, OPA said.

Nonferrous Founders to Meet With OPA in 17 Cities on Prices

••• Regional meetings in 17 cities are planned for the next five weeks by the Office of Price Administration for discussion of the non-ferrous foundry industry's price problems. Attendance is expected to range from about 50 in San Francisco to 450 in Chicago. Meetings already arranged include: St. Paul, Minn., Feb. 17; Chicago, Feb. 18; Detroit, Feb. 19; Cleveland, Feb. 20; Denver, Feb. 27; Seattle, March 2; San Francisco, March 3; and Los Angeles, March 5. Meetings are tentatively arranged for Cincinnati, March 10; Kansas City, March 11; Dallas, March 12; Memphis, March 13. During the week of Feb. 9, meetings were held in New York, Philadelphia, Rochester and Boston.



A LOT OF CASTING to chip is this lower half of casing for a 75,000 cfm. blast furnace blower shown in the Allis-Chalmers plant at Milwaukee. When finished the big blower will provide forced air for the blast furnace operations of American Rolling Mill at Ashland, Ky., and help to provide more pig iron vital to the nation's defense.

BOMB FACTORY: The munition plant shown below produces 500 lb. bombs for the RAF. Mass casting of these projectiles has been brought to a high level. (Passed by British censor).

British-Combine photo



Republic Employs 70,000; National Plants 94% on War Cleveland

• • • Admitting that lack of "an ample supply of raw materials" prevented operations in 1941 from averaging well over 100 per cent of capacity, the Republic Steel Corp. reports that its 1941 average rate was 99.5 per cent, and that it has 70,000 people on the payroll, the largest number in its history. In the company's annual report, T. M. Girdler, chairman of the board, called attention to the company's "substantial expansion" in plate capacity, electric furnace capacity, and in its blast furnace program.

"The blast furnace program, which will aid in relieving scrap shortages, and includes five blast furnaces with an annual capacity of 220,000 tons, together with necessary by-product coke ovens and other facilities and the expansion of both coal and iron mining operations, is now under way. It will enable the corporation to use a larger per cent of pig iron in its steel furnace charges." Electric furnace steel capacity was expanded 50 per cent from 500,000 tons annually at the beginning of 1941 to 750,000 tons by the year end, "and even this total will be nearly doubled when furnaces now under construction or planned are completed." In addition, Republic's plate capacity was expanded by some 220,000 tons during the year. The company reported that "since the closing months of 1941 only a very small part of production has gone to other than defense purposes."

The company earned \$24,038,340 in 1941, equal to \$3.87 a common share, after federal taxes of \$46,250,000, and a \$13,349,887 charge for depreciation, depletion, and amortization. These results were shown on sales and operating revenue of \$483,812,368.

Flexible Can Developed By Reynolds Metal Co.

• • • Reynolds Metals Co. has announced a new water-proof, vapor-proof material for defense packaging, which is being widely acclaimed as a flexible can, relieving demands on critical materials. This new product is being marketed as Type B "Victory Stock."

What England Thinks Of Its Technical Press

••• On the occasion of the 21st anniversary of its incorporation as a limited liability company, the deputy chairman of British Timkin, Ltd., Mr. John Pascoe, addressed a spontaneous tribute to the technical Press of this country (Britain). Because so authoritative a viewpoint has, it is believed, not been before put forward, it has been considered desirable that Mr. Pascoe's comments be reported here *in extenso*.

"Gentlemen, some industrial concerns have a habit of inviting you to the Savoy when they want your help in putting over the story of some new product or development. This little gathering may be considered by you rather an unusual one in that we have invited you here and have no story to put over—at least, no story you could write about. True this year sees the 21st anniversary of our incorporation as a limited liability company, but there is hardly more than a couple of lines in that because it is not our 21st birthday as bearing makers—as most of you know, we have been making the Timkin tapered roller bearing for well over 30 years.

"The reason I have invited you to give me the pleasure and honour of your company is that, looking back over the years and taking mental stock of one's main impressions, as you are inclined to do on passing such a milestone, I found myself considering our relations with the technical Press.

"I reflected that, in the beginning, the Timkin bearing was produced in small numbers and we progressed to bigger outputs only as the product became known and appreciated. To make known the product, certain engineers styled 'representatives' travelled up and down the country and called on works managers, production engineers, chief draughtsmen and others to tell them all about it. They did good work.

"But their task was immensely simplified by the fact that Britain possesses a very fine technical Press. We saw its merit and advertised in it. And the editors of technical journals often found our products worthy of editorial mention and wrote intelligent articles which were as useful to their read-

ers as to us. Whereas one representative might call on six people in a day, a technical journal might—and often does—go half-way round the world in comparatively little time. The technical Press certainly helped us to get known and has played a large part in the building of the Timkin organization which now has several works, gives employment to a great many homes indeed, and produces something which justifies that much misused description 'known the world over.'

"So, looking back, I feel that we have benefited considerably from co-operation with the technical Press. Looking forward, we hope that our relations with you will always be good. We shall always support you as much as we can with advertising and editors will always find us helpful in dealing with any editorial query or the supply of technical information.

"Now, let me drop the British Timkin angle altogether and talk about you. I would like to say how impressed I am by the way the technical Press of this country is doing its job amid very difficult conditions of paper supply and man power.

"The technical Press is doing very real and vital services to industry. Its work is an essential part of the drive for higher and higher production. All executives know how valuable it is to be able to get-together with fellow technicians from other parts of the country. Even in peace-time it is possible only for some of the larger industries to organize a really representative gathering of men from all parts of the country. Yet technical journals stage a conference of the particular industries they serve either once a week, bi-monthly or monthly.

"They give us news of the latest results of research and of the practical application of new production ideas. Through the articles in their pages we are often able to read the views of experts to meet and talk with whom many an industrialist and technician would willingly journey the length of this country. They abstract the essential points from journals in other countries and save industry an immense amount of time

and trouble in so doing. They act as an exchange of information on welfare and other works management problems, which are of great importance at all times, but are vital in our war-time production drive.

"I am, as I have already said, aware that the technical Press is fulfilling its functions despite difficulties. I only hope that the powers that be will have due regard for those difficulties and not aggravate them.

"I hope, for instance, that it will be possible to avoid raising the age of reservation. A technical journalist has to be doubly skilled. He has to be experienced in journalism as a groundwork. He has to be a journalist far more responsible than his colleagues in other fields. Accuracy in his facts and precision in his language are worthy and important things with him. But not only does he have to be a good journalist, he has also to develop a far-reaching knowledge of the industry his journal serves. He has to be able to meet the experts of the industry on their own ground. He has to draw out the good they can give to industry. He is the key man of his industry's brains exchange.

"It would be most unfortunate lightly to take away for the Services these experienced men, practically all of whom are serving hundreds, and in some cases thousands, of firms fully engaged on essential production.

"Also, I hope that something can be done about the paper problems of the technical Press. There are few people in this country who do not realize how important it is to us to have unfettered newspapers. Technical journals are the newspapers of industry—one might put it more vitally and say the newspapers of production. There is still too much paper being wasted on publications which have very poor claims to service to the community compared with those of the technical Press. There is no waste about the circulation of a technical journal. No one would buy a journal unless he was definitely interested in the industry—and a particular industry at that. Fur-

(CONTINUED ON PAGE 96)

NEW PRINCIPLE TRIPLES HEAT TREATING PRODUCTION...
KEEPS WORK STRAIGHTER...WITH SUBSTANTIAL COST REDUCTIONS

All the advantages of 100% FORCED CONVECTION HEATING Now Available for Temperatures to 1750°

MUST YOU quickly increase heat treating production in a limited floor area? Does your work distort badly in heating or quenching? Is your present equipment unable to meet required heating accuracies? If you are faced with any of these conditions, then the Super Cyclone can help you. Here's a brand new heating principle that completely explodes heating theories which the text books have proclaimed for years. Using 100% forced convection heating for such operations as hardening, annealing, normalizing, etc. this new heating principle has seldom failed to triple or quadruple production, hold distortion to closer limits than any other heating method used before, or cut heating and handling costs far below those previously experienced.

Heat treaters have realized for years that forced convection heating should be the ideal method for heating in the hardening and annealing ranges. Faster heating, greater production and more uniform heating of heavy charges would obviously be the result if forced circulation could be utilized for the high temperatures. But tradition and textbook theories... having authority only because of their age... had chained and shackled development of practical equipment utilizing the advantages of high temperature forced circulation heating. Tradition said it wasn't practical... that Heat could not be successfully transmitted by 100% forced convection at temperatures above 1300° F.

LINDBERG ENGINEERS DO IT

Experience in designing several thousand Cyclone Tempering Furnaces which utilize forced convection for temperatures to 1250° F. indicated to Lindberg Engineers that there was no logical reason to limit the temperature range of forced convection. There were, of course, plenty of mechanical problems to be solved... but basically, why couldn't it be done? Why not build a high temperature forced convection heated furnace and find out? Eighteen months ago they built the furnace... put it into 24-hour a day production service... the first Super-Cyclone. It was a success from the start. As the weeks

rolled on a careful and continuous study was made of its operation. Minor weaknesses were systematically eliminated... the design modified in the light of practical operating experience... construction changes made here and there... but basically the Super-Cyclone is today the same furnace that went to work under production conditions 18-months back.

ADVANTAGES QUICKLY APPARENT

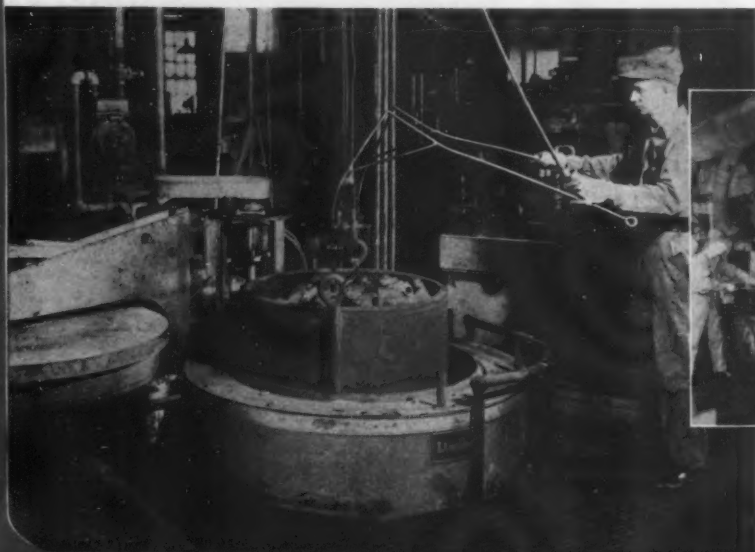
This new heating principle completely eliminated distortion... or cut it to practically nothing. For example in hardening of SAE 4140 worm gears weighing 20 lbs. each: Using Box Furnace hardening, 85% of the gears distorted from .015" to .025", and required considerable straightening time. When this job was heated and quenched from the Super Cyclone 90% of the gears required no straightening whatsoever, and the balance was out a maximum of only .010", easily and quickly taken care of with the press.

Fifty thousandths grinding stock had been required on ring gears from 24 to 36" dia., to take care of distortion which occurred when heat treated in box type hardening furnaces. When heat treated in the Super Cyclone the customer found that grinding stock could be reduced to .020"... thirty thousandths grinding stock saved!

HEAVY PRODUCTION INCREASES

Older heating methods such as radiation heated box type furnaces are limited to a single layer of parts loaded on the hearth... and even then can rarely heat a heavy load uniformly. This is in decided contrast to the Super Cyclone in which work is piled up for handling. In hardening from the Super Cyclone for instance, the work is heated, quenched, and drawn on the fixture. It has been found that the Super Cyclone handles anywhere from three to ten times as much work per hour per unit of floor space as compared with conventional furnaces. Typical of this is the experience of a large midwestern appliance manufacturer in whose plant 8-Box Type Furnaces were used for annealing grey iron castings as shown in the picture at

left. These required an area 36' long x 9' wide. One Super Cyclone requiring a space 6' x 9' long turned out as much work in eight hours as all 8 of the Box Furnaces had previously done in 16 hours. Thus, one Super Cyclone, using but 1/6th the floor area, actually doubled the production of the 8-older furnaces, or to put it another way: Super Cyclone production was 12-times greater per unit of floor space than that of the older equipment.



Super Cyclone at left anneals twice as many grey iron castings as eight furnaces shown above. Occupies 1/6th the floor area.

SOME FIGURES TO USE FOR COMPARISON

A large Wisconsin foundry reports the following production results from their 60" diameter x 48" deep Super Cyclone Installation:

HARDENING: Loads for hardening average 2400 lbs.
Heating time averages 1-hour 45 minutes. (Hardening temperature 1600° F. Maximum metal cross section of hardened parts 1 1/4")
12-loads handled per day for average daily production of 28,800 lbs. work . . . over 14 tons.
Brinell hardness held within 207 to 241.

NORMALIZING: (using same furnace as above.)
Loads vary between 4500 and 6000 lbs.
Typical load is 5000 lbs.
Time to come to heat averages 2-hour 15-minutes
(Heating cycle: heat to 1520°, hold 1-hr. air cool.)
7-heats handled per day average for production of 35,000 lbs. or 17 1/2 tons.

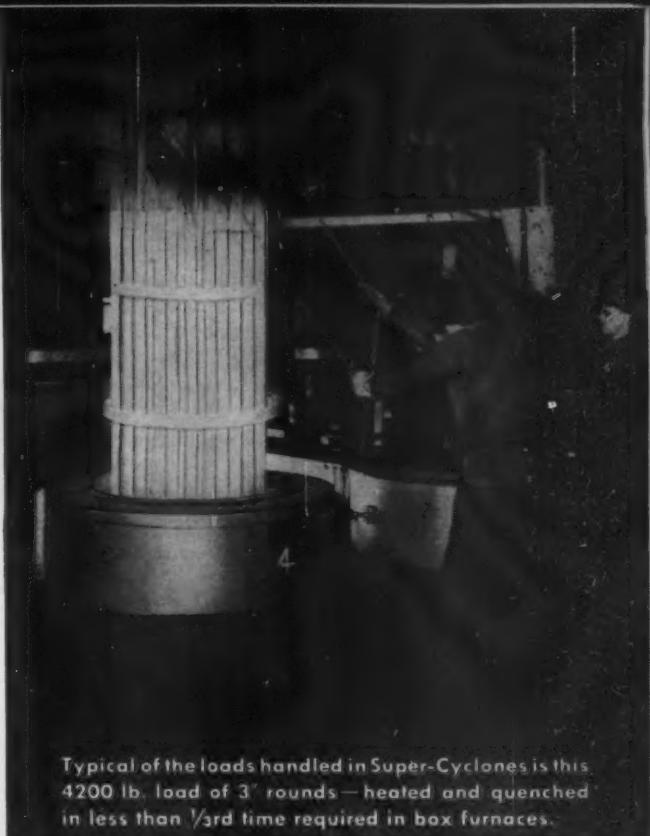
STANDARD SIZES IN WHICH THE SUPER CYCLONE IS AVAILABLE

Delivery time is speeded considerably when standard size furnaces are selected, rather than special sizes which must be drawn up. Drawings are available for the following sizes of Super Cyclones all of which have been built and are in operation. Most are gas fired, although a number are available electrically heated.

CHAMBER SIZE	CHAMBER SIZE	CHAMBER SIZE
16" diameter x 20" deep	28" diameter x 28" deep	38" diameter x 60" deep
22" diameter x 26" deep	28" diameter x 48" deep	43" diameter x 48" deep
22" diameter x 36" deep	28" diameter x 60" deep	48" diameter x 72" deep
25" diameter x 20" deep	33" diameter x 36" deep	60" diameter x 36" deep
25" diameter x 30" deep	33" diameter x 48" deep	60" diameter x 48" deep
25" diameter x 48" deep	38" diameter x 36" deep	60" diameter x 72" deep
	38" diameter x 48" deep	

100 SUPER-CYCLONE INSTALLATIONS ALREADY IN SERVICE

IMPORTANT NOTE: Like all other Lindberg developments, the Super-Cyclone has been thoroughly proved under 24-hour a day production conditions for a minimum of 12-months before announcement to the trade. Every effort has been made to restrict the sale of these units until the probationary period was completed. In spite of this, however, many of those who have seen the furnace in operation during the past 18-months have quickly been aware of its production possibilities and requested that units be constructed for them. Thus, over 100-Super Cyclone installations are in service from coast to coast. One or more of these is near you, as is a Lindberg District Office, staffed by practical and competent sales engineers. The Super-Cyclone is not a cure all, nor do we represent it as such. It is speeding production, turning out straighter work, and cutting costs for many firms however, and we will be glad to survey its possibilities for you, on your work, at your request.

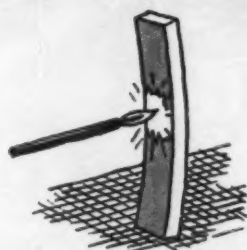


Typical of the loads handled in Super-Cyclones is this 4200 lb. load of 3" rounds—heated and quenched in less than 1/3rd time required in box furnaces.

LINDBERG FURNACES

LINDBERG ENGINEERING COMPANY
2452 WEST HUBBARD STREET CHICAGO

WHAT WILL THE SUPER CYCLONE DO FOR YOU? USE THESE QUICK CHECKS TO FIND OUT

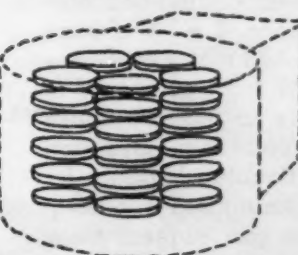


**ELIMINATES ONE SIDED HEAT
... KEEPS WORK STRAIGHT**

Prove to yourself how one-sided heat causes distortion. Take a flat bar and heat it on one side with a torch. Notice how it bows. This is what happens when radiation heat strikes only one part of your work in the furnace. Contrast this with the Super-Cyclone in which forced convection is the only heating method. Heat floods through every part of the charge under pressure, and at high velocities. Radiation from a source hotter than the desired temperature is completely absent. As a result your work is not strained or pulled out of shape by one-sided heat. The result is that straightening is either completely eliminated—or reduced to a fraction of what is required when work is handled in conventional equipment. When your work goes into the Super Cyclone straight it stays straight... cuts straightening costs... speeds production.

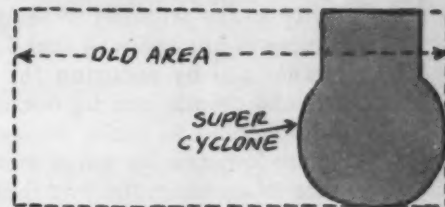


WORK
IS
PILED
UP
IN
SUPER
CYCLONE.



**HEAVY LOADS ACCURATELY HEATED
... PRODUCTION SPEEDED**

You can easily verify the production increases possible through Super Cyclone Heating. Just spread an average 3000 lb. load of your parts on the floor one layer thick as handled in a radiation heated furnace. Measure the area required. Then take those same parts and pile them up in a 36" or 48" circle, making allowance for spacers or supports. Figure it will take you a maximum of 3-hours to heat the piled up parts on a fixture. Five minutes to quench the lot. Ordinarily you will find production increase of from 200 to 1000% possible. Parts remain on fixture for quenching and tempering, a substantial saving in handling.



**CRAMPED FOR FLOOR SPACE
... THEN DO THIS!**

Just measure the total floor space required to turn out your present production by your present methods. As a very conservative thumb rule you can figure that the Super Cyclone will require not more than 1/3rd the floor area needed by any other type of equipment, to handle the same or greatly increased production. The result... production increases of several hundred percent in present floor area... quick production increases without having to move or expand heat treat department area.

These thumb-rules are, of course, general and may not fit all cases. They are averages of what the Super-Cyclone has done in many plants. A Lindberg Representative can quickly and accurately give you any production figures, floor space layouts, or other information you may need.

ther, each copy is nearly always read by more than one technician. Often a copy bought by a factory is read by a dozen executives, sometimes by many more. Taking our own case at the British Timkin works, some journals are read by as many as 30 people. They are kept for more than a year—and are constantly referred to during that period."

—From "Light Metals," Jan., 1942

WPB Urges Plate Designs Be Changed

Washington

••• At a meeting on Wednesday of last week, C. E. Adams, Chief of WPB's Iron and Steel Branch told the Steel Industry Advisory Committee that the steel industry must take the lead in getting users of steel plates to change designs

in order to take advantage of added capacity from strip mills. The plan, long under consideration, is to use these mills for the production of plates 72-in. and narrower in order to further devote the capacity of sheared plate mills to pressing military demands.

Based on reports from 77 mills, a recent survey on plate production was presented to the Committee by J. V. Honeycutt and J. L. Block, Iron and Steel Branch executive consultants. It revealed a monthly plate capacity of 932,100 tons. The survey comprised 28 sheared plate units with a total monthly capacity of 401,100 tons;

How to CONSERVE CRITICAL MATERIALS

● Conservation of critical materials under war conditions is more than a matter of cost reduction or, of profit or loss. It is a matter of contributing in a practical way to the winning of the war. Forging to close tolerances is but one way that T & W helps you to conserve materials. By reducing the percentage of rejects of finished work, and by avoiding methods and practices which tend to make excessive scrap, T & W obtains more forgings per ton of material. Add to this conservation of material the fact that T & W forgings formed to close tolerances require less time to finish because

there is less metal to remove, and you obtain a double advantage by using T & W forgings. T & W forging engineers can suggest other ways by which you may conserve critical materials in using forgings. Ask them for suggestions.

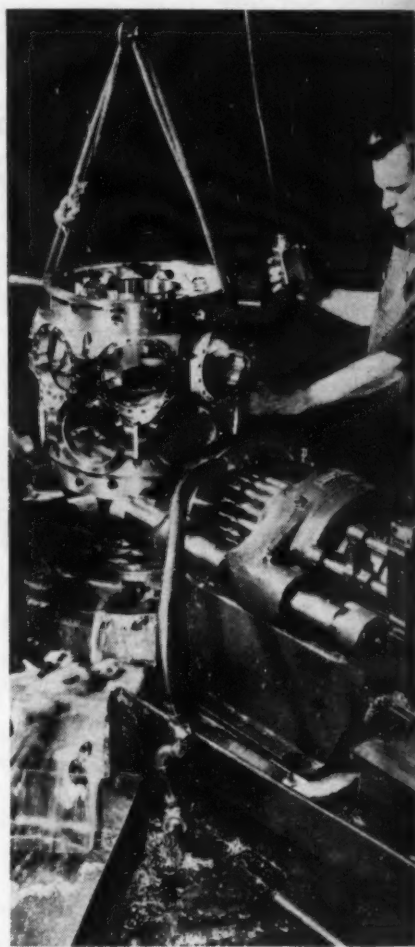


FORGINGS

**USUALLY COST LESS
AT THE POINT OF
ASSEMBLY**

TRANSUE & WILLIAMS
STEEL FORGING CORPORATION
ALLIANCE, OHIO

Sales Offices: New York, Philadelphia, Chicago, Indianapolis, Detroit and Cleveland



SAVED, 109 MINUTES: This new machine tool saves almost two hours in the production of every 14-cylinder Pratt & Whitney "Twin Wasp" engine built at the company's East Hartford, Conn., plant. It drills, countersinks and spotfaces 224 identical $\frac{3}{8}$ " holes in the aluminum crankcase, working simultaneously on 32 holes from two different directions. These operations previously required three machines and took 2 hours, 12 minutes. This one machine now completes the job in 23 minutes.

Still on the Job after 35,136 Hours..

SOLNUS HYDRAULIC OILS *Help Presses Maintain Higher P.Q.**

Clogged oil lines . . . loss of efficiency . . . faulty pressures . . . frequent oil changes are a thing of the past and Production Quota is at a new high with SOLNUS Hydraulic Oils. That's the record of one large manufacturer of wire products.

The hydraulic systems of four welders, with a capacity of 30 gallons each, were filled with SOLNUS Hydraulic Oils nearly two years ago. They've been on the job ever since . . . developing pressures of 400 to 600 pounds! There hasn't been one moment lost because

of shutdowns for cleanouts. In fact, samples removed for laboratory tests proved there had been no substantial change and these oils were suitable for many hours of future use.

If you are troubled with time consuming cleanouts due to formation of sludge and clogged oil lines call in a SUN Oil Engineer today. Let one of these "Doctors of Industry" prove to you how SOLNUS Hydraulic Oils make possible a higher Production Quota.

SUN OIL COMPANY—Philadelphia
Sponsors of the Sunoco News Voice of the Air—Lowell Thomas

*Production Quota

Copyright 1942, by Sun Oil Co.

SUNOCO

SUN PETROLEUM PRODUCTS.. HELPING INDUSTRY HELP AMERICA

22 universal mills with a total monthly capacity of 125,000 tons and 27 strip mills with a total monthly capacity of 406,000 tons.

The rated capacities were predicated on an average range of orders and on present shearing and other finishing facilities. Furthermore, due allowance was made in certain instances for other important steel products urgently needed in the war program and produced on the same equipment.

Included in the strip mill tonnage are 10 wide continuous strip mills, operated by nine companies, all of which can produce plates up to 72-in. wide, and three of which can produce plates up to 90 in. wide. The combined monthly plate capacity of these 10 mills is 303,500 tons. Maximum thicknesses produced on these mills vary from $\frac{3}{8}$ to $\frac{3}{4}$ in.

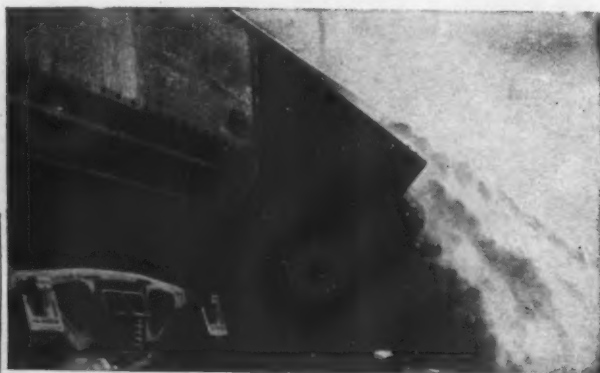
Among the sheared plate mills there are only 13 operated by eight

1941 Steel Payrolls Are 35% Above 1940's

• • • Employment in the steel industry rose during December to 646,000, as against 645,000 in November, according to the American Iron and Steel Institute. In Dec., 1940, 585,000 employees were at work in the industry.

Steel payrolls were \$117,221,000 in December, bringing the total for 1941 to \$1,301,348,000, or nearly 35 per cent more than 1940 payrolls of \$960,779,000. The November total was \$109,856,000 and that of December, 1940, was \$91,233,000.

Wage-earning employees in the industry earned an average of 99.9c. per hour in December, compared with 99c. in November and 86.5c. in December a year ago. Hourly earnings of wage earners throughout 1941 averaged 95.9c. per hour, compared with 85c. in 1940. Wage earners worked an average of 38.2 hr. per week in December, as against 37.6 hr. per week in both November 1941 and December 1940.



60%

MORE EFFICIENT WASTE DISPOSAL

KOPPEL

Did you know that the new Koppel 50 cubic yard Automatic Air Dump car has increased waste disposal efficiency 60% ...and cut initial cost 27% below that of ordinary equipment?

If this sounds unbelievable or you would like to apply these savings to your own operations, we can furnish operating figures that will definitely interest you as a practical operating executive.

PRESSED STEEL CAR CO., INC.

(KOPPEL DIVISION)

NEW YORK

PITTSBURGH

CHICAGO

companies, which can produce plates 90 in. and wider, more than $\frac{3}{4}$ in. thick. The combined plate capacity of these mills is 227,300 tons per month. It is in the last mentioned category that there appears to be the greatest demand for plates for the war program. It is, therefore, essential, it was pointed out, that no plates be produced in these mills which can be rolled on other mills and that, to the greatest extent possible, requirements be redesigned to permit their production on the strip mills. There is now under construction addition capacity which will be available at various times throughout 1942 and into the early part of 1943, totaling 46,000 tons per month. Most of this capacity is in sheared plates.

Due to various size limitations, it is not thought likely that the full capacity of 932,100 tons per month can be attained. However, it is estimated that the industry should be able to produce well over 800,000 tons of steel plates per month.

December plate production, the largest on record, was 635,812 tons. January figures are not yet available, but it is believed that January production will be approximately 700,000 tons.

LATROBE



The Mark of Better Tool Steels

▲ A trade-mark should be more than a mere mark of identity . . . it should provide a tangible expression of merit!

For years this distinctive *Latrobe* symbol has served to identify the finest in tool steel quality. ▲ Today, when tooling demands are so critical, the utmost in tool steel value must be assured. ▲ You can depend upon the *Latrobe* trademark, for it has become recognized throughout Industry as *The Mark of Better Tool Steels!*

Latrobe

ELECTRIC STEEL COMPANY

MAIN OFFICES & PLANT • LATROBE • PA.

BRANCH OFFICES AND WAREHOUSES:

DETROIT
TOLEDO
DAYTON
PITTSBURGH

LOS ANGELES
PHILADELPHIA
CHICAGO
CLEVELAND

NEW YORK
CINCINNATI
MILWAUKEE
HARTFORD

ROCHESTER
INDIANAPOLIS
WASHINGTON
SEATTLE

J. & L. and Otis Steel Merger Is Studied

Pittsburgh

••• A belief that post war conditions will present difficult problems for some steel companies with a one-plant or one-basing point set-up, is behind a move by Jones & Laughlin Steel Corp. of Pittsburgh, and Otis Steel Co. of Cleveland to explore the feasibility of

merging the two companies for a common interest.

Heads of both outfits late last week admitted preliminary negotiations were under way but informed sources believe that the initial stages of negotiations were passed some time ago. The Otis Steel management and board of directors are said to have acted favorably on the merging of Otis with Jones & Laughlin.

G-M War Payroll To Reach 342,000

Detroit

••• C. E. Wilson, president of General Motors Corp., revealed Sunday that GM would employ 148,000 workers on defense production in March, 185,400 in June and 235,000 in September. The latter figure represents GM's previous employment peak in peacetime. By next December 272,000 workers will be on the payroll. The figure will reach 325,000 in June, 1943. Eventual employment by GM on war work is aimed at 342,000 workers.

If no present unforeseen circumstances arise it is expected that Jones & Laughlin will absorb the Otis company after certain routine details are complied with. It is believed that the Jones & Laughlin management is at present making a final study of the deal which has already been approved by Otis Steel. Such a merger, it is understood, may require the sanction of certain governmental authorities.

The consolidation would give Jones & Laughlin a Cleveland basing point on sheets, strip, plates, and some other items manufactured by the local concern. It is more or less a foregone conclusion that when and if the merger goes through, certain midwestern accounts serviced by the Pittsburgh concern in the flat rolled category will be supplied by the Cleveland plant which has a modern 77 in. wide strip mill, capacity of which approximates 500,000 net tons or more per year.

The reported merger brings to mind June, 1938, when many new basing points were established which overnight formally met and increased freight absorption for Pittsburgh concerns in moving their products east, west, north or south and to one extent this same condition also applied to steel plants in other areas which had but one basing point area.

A merging of Otis Steel with Jones & Laughlin will mean an annual total of the following capacities: Pig iron, Otis Steel Co., 482,000 net tons; Jones & Laughlin 3,360,000 net tons. Steel, Otis Steel Co., 977,000 net tons; Jones & Laughlin, 3,944,000 net tons.

PERKINS MAN COOLERS

TRADE MARK REGISTERED UNITED STATES PATENT OFFICE



Perkins Man Coolers eliminate the depressing effects of extreme heat and help prevent costly lags in production.

Oscillating and stationary types, both portable.

B. F. PERKINS & SON, INC.

ENGINEERS AND MANUFACTURERS

HOLYOKE

MASSACHUSETTS

TESTS PROVE HIGH EFFICIENCY of MAEHLER STRESS RELIEF OVENS!

Summary of Report from Shell
Casing Department,
Norris Stamping and Mfg. Co.
Los Angeles, Calif.

TESTS ON TEMPERATURE DISTRIBUTION— NO LOAD CONDITIONS

Oven controller set at 500 degrees F. Furnace controller set at 580 degrees F. Interior exploration with thermocouples through nine different openings showed no significant difference in temperatures in any of these nine positions!

TESTS UNDER FULL LOAD CONDITIONS—

Seven tests were run in which two thermocouples were inserted in drilled holes in the bases of 105 mm. cases and placed in various positions in the loads.

CONDITIONS OF TEST

Load: Four trucks weighing approximately 800 lbs.
110 cases (105 mm.) on each truck at 6 lbs.
each. Total weight cases 2640 lbs.
Oven Controller set for 500 degrees F. 3440 lbs.
Heater Controller set for 580 degrees F.
All bare wire thermocouples used.
Oven up to temperature for varying lengths of time before loading.

RESULTS

These loads of 3440 lbs. come up to 500 degrees F. in 40 minutes. The control couple and the check couple come up to temperature in about the same time—plus or minus three minutes, about the limit of reading the times off the charts.

Check couples in the center of a loaded rack come up in 40 minutes and there is no significant difference in the temperature in any part of the load, in any part of the oven. A temperature difference of 5 degrees usually existed between the two check couples. This difference was not consistent for any location, like front or back, top or bottoms.

The temperature of 525 degrees F. was reached about 15 minutes after the work reached 500 degrees F. and remained constant at 525 degrees F. for about 45 minutes of a one-hour stress relief.

The variation throughout a loaded oven is less than the specified 10 degrees.

THIS is typical of results you can expect from Maehler Heat Treating Ovens for any job! Write for NEW BULLETIN and details on ovens for your job today.

THE PAUL MAEHLER COMPANY
2212 W. Lake St. • Chicago, Ill.

MAEHLER

Recirculating Airheat Ovens

for Tempering, Bluing, Aging, Annealing, Drawing, Stress Relieving, Normalizing, Japanning, Enamel Baking, Core Baking and other industrial purposes.

Davey Directors Vote Steel Company's Sale

Cleveland

••• Inability to get sufficient semi-finished steel to permit economic operations has resulted in a decision by the directors of the Davey Steel Co. to recommend to the stockholders that on Feb. 17 they approve sale of the company to Detroit interests. In making the announcement Harry L. Berno,

president, stated that at present and undoubtedly for the duration there will be an excess of finishing capacity over ingot capacity in American steel industry. "This makes it impossible for our company, even though it is 100 per cent on high rated war work, to get enough steel to maintain an organization, or to prevent losses," he said. "With the finishing departments of the integrated steel companies working well below ca-

capacity, they are reluctant to ship steel out of their own plants to another finishing mill."

Thus, the predicament of the non-integrated mills, which has been steadily worsening (see THE IRON AGE, Jan. 29) has already caused a casualty among these mills. It is reported that the Davey Steel Co. received approximately 78 per cent of its requirements in sheet bars to permit utilization of capacity at that rate through the end of March. The company is likely to receive a similar allocation for April and present plans are for termination of operations by the present management on May 1, 1942.

The Detroit interests who are planning to purchase the mill were not revealed, although the Davey management stated that they would not continue in the business of producing sheet steel.

Cottonseed Oil Studied For Tin Plate Mill Use

••• Faced with a shortage of imported palm oil, important as a protective coating in tin plate manufacture, at least one large steel company is experimenting with the use of domestically produced cottonseed oil as a possible substitute for the imported material.

While the steel company has not yet completed its investigations, preliminary results are said to indicate that such substitution will be feasible. Extension of the war to the Pacific has reduced imports of palm oil to a negligible quantity.

Canada Building Plant to Make Rubber from Petroleum

Toronto

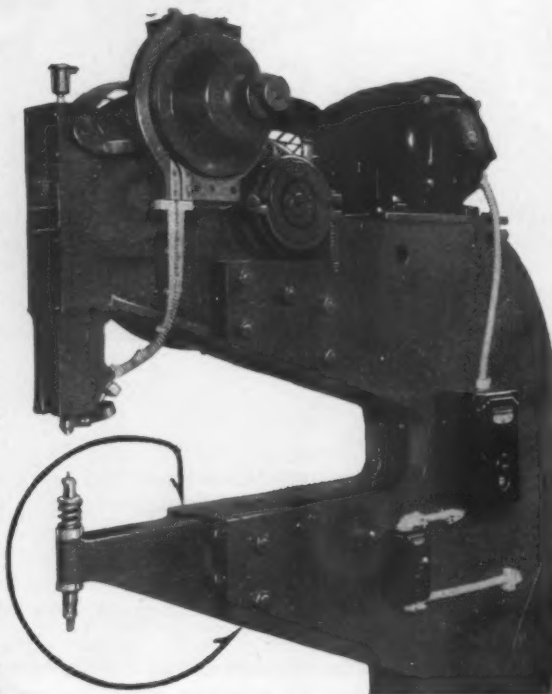
••• C. D. Howe, Minister of Munitions and Supply, has announced that the Canadian Government will manufacture synthetic rubber from petroleum. He said the base plant will be established at the Sarnia, Ont., end of a pipeline carrying petroleum to Canada from the United States. The plant is expected to be in production within 15 months, Mr. Howe said. There are three stages in making rubber from petroleum and it has not yet been decided whether the two subsequent processes also will be carried out in Sarnia.

1" DIA. SOLID STEEL RIVETS **4** automatically fed and set at rates averaging 1600 per hour

Not only does this RIVITOR handle the 1/4" rivets but also (with different tooling) as efficiently handles the lighter riveting down to 1/16" diameter rivets. This greater capacity meets requirements of a greater number of jobs.

Work requiring up to 36" throat depths can be accommodated.

The detachable horn permits simple application of a variety of lower tooling designs. This machine's sturdy, rugged construction throughout provides, with minor replacements, it extended life to make full use of its versatility for riveting production now and from (practically) now on.



"RS" RIVITOR

The average rate of 1600 rivets set per hour may be raised or in some cases lowered depending on the ease with which the work can be handled. The riveting stroke is made at the rate of 190 per minute (flywheel speed).


write for Bulletin R-4

THE TOMKINS-JOHNSON CO., 628 N. Mechanic Street, Jackson, Michigan

this is a **TOMKINS-JOHNSON** product

WORLD'S **FASTEST** 600 AMPERE CONTACTOR for D-C Service


TO HELP GET **MORE** *Steel Production*



The faster response of this EC&M Contactor results in greater accuracy in spotting crane loads, fewer applications of down-power, reduced number of bridge and trolley motions—faster positioning of screwdowns, sideguards, manipulator fingers, etc. . . . briefly, an aid to make '42 a record year.

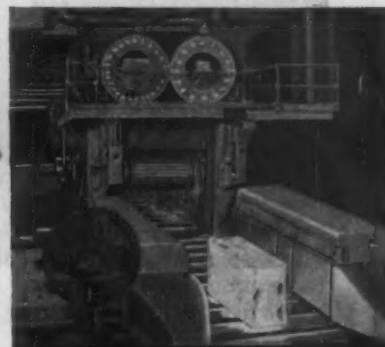
Offers Many Outstanding Features

This new EC&M Magnetic Contactor is 50% faster than the previous 600 ampere contactor, has a 2-position adjustment permitting over 1/2" contact-wear, is designed with highly efficient magnetic circuit, keeping leakage flux at minimum and inductance down, has powerful magnetic blow-out and large arc shield for highly inductive circuits, and embodies Line-Arc principle.



IT PAYS TO
MODERNIZE

Be sure to specify
EC&M Line-Arc
Contactor Control for
d-c cranes and mill
auxiliary drives.



A prominent steel company recently increased production by over 9,600 tons per month through modernization. Among the new equipment were EC&M Controllers for all auxiliary drives—tables, sideguards, screwdown, manipulators, etc., of this mill.

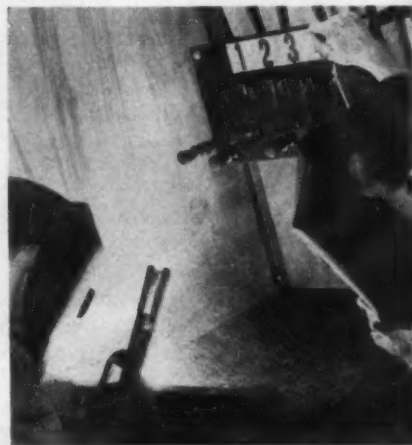
THE ELECTRIC CONTROLLER & MFG. CO.

Burned Out, Plant Quickly Triples Output

Cleveland

••• Four months after a \$2,000,000 fire had destroyed its plant, the National Bronze & Aluminum Foundry Co. announced that it had actually tripled its output from the level prevailing at the time of the fire. At the same time, the company, an important producer of

aluminum castings, parts for airplane motors, submarines, and tanks, revealed the institution of a program to train 1000 workers in 14 weeks with the co-operation of the WPB's training-within-industry division, the WPA, and the Board of Education's training supervisors. The company now employs 1500 workers and is planning to double its output within the next four months.



INDUSTRIAL "BLINDFOLD" TEST:

Just as smokers are asked to select their favorite cigarette, 20 operators recently tried five different arc welding machines at the Westinghouse East Pittsburgh works to test their weldability. The machines were hidden from view. The operators completely disagreed on which machine was the best for the job, indicating the need for establishing a standard and developing a scientific method of checking whether or not a machine meets these standards.

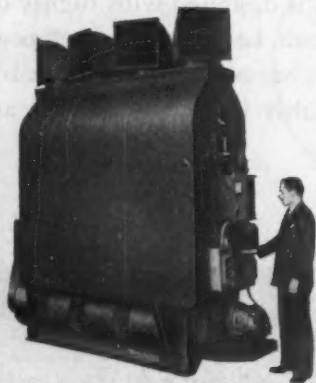
Direct Fired Heat...

Quickly
and
Cheaply

DRAVO DIRECT FIRED HEATERS

the answer

**to your heat problems
on quick construction for defense...**



NEW plants... additions to existing structures may be heated at surprisingly low cost during construction and permanently after completion with Dravo Direct Fired Heaters.

These heaters provide inherent advantages of low initial and operating costs and flexibility of installation. Burning gas, oil or coke oven gas, they produce proven heat transfer efficiencies up to 85%. Air is warmed and delivered when and where needed—instantly—economically—showing distinct savings over conventional heating systems.

Stock sizes with 750,000 to 1,500,000

B. t. u. output are available. Group installations can be arranged to heat any large industrial building.



We are prepared to quote on the bare units or complete installation. Dravo Bulletin No. 502 contains complete, usable data and will undoubtedly save you weeks of time. Time was never more precious—if your job requires heat quickly and economically for years to come—consult your Sweet's or write us for descriptive literature.

DRAVO CORPORATION

Machinery Division

Heater Department

DRAVO BUILDING · PITTSBURGH, PA.

4800 Prospect Avenue, Cleveland

Broad Street Station Building, Philadelphia

Employment Up 20% in Year at Allegheny Ludlum

••• Keeping pace with new facilities, the Allegheny Ludlum Steel Corp. has added 2000 employees during the past year. At the present time, working against a \$30,000,000 backlog of orders, the company is employing more than 12,000 workers, twice the working force employed just after the merger of the Allegheny and Ludlum Steel Cos. late in 1938. Company employees were paid more than \$24,000,000 in wages and salaries during 1941.

Civilian Output of Buffalo Wire Firm Cut Only 15%

Buffalo

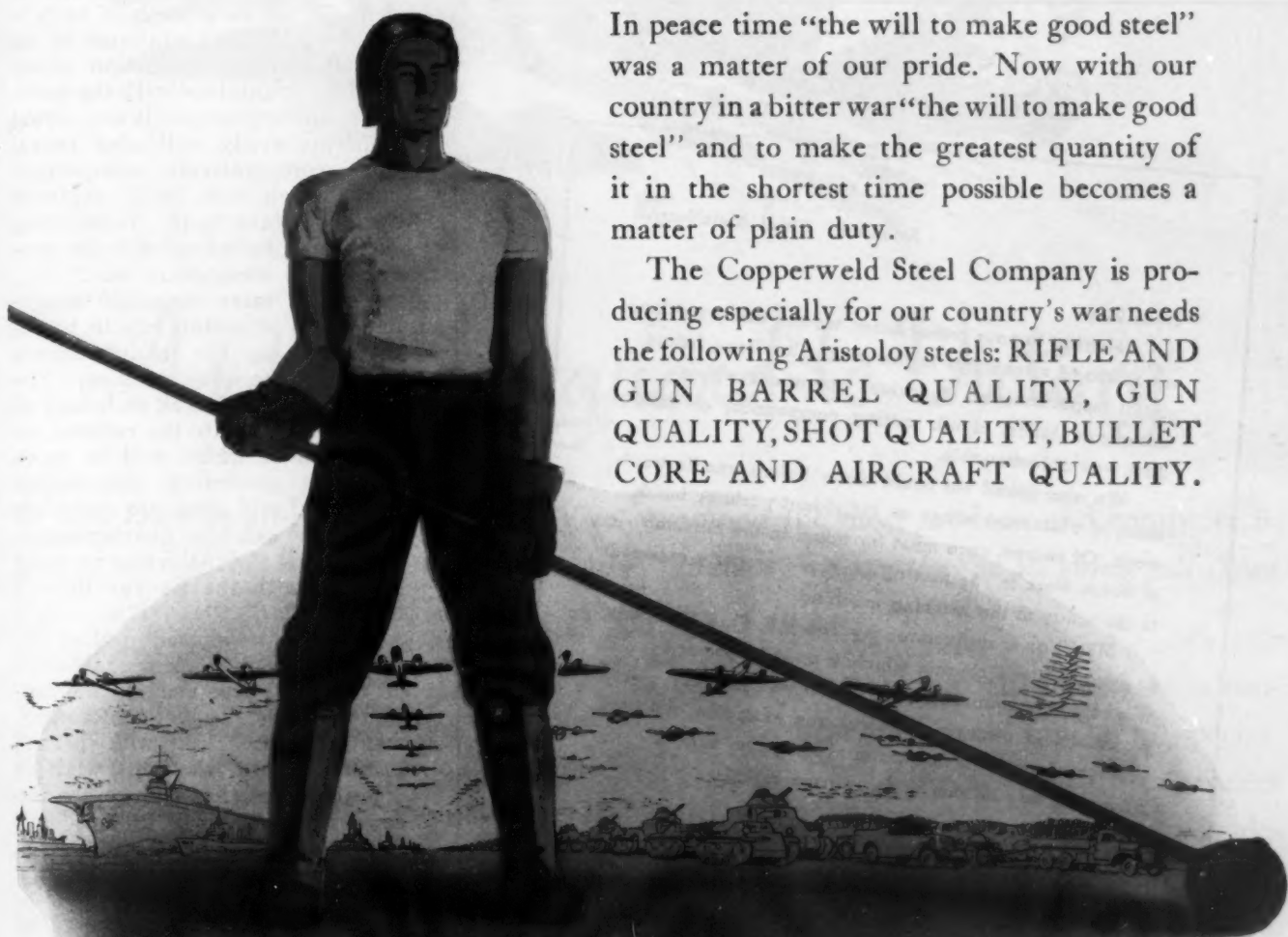
••• Increased production of steel wire for war industries by the Madison Wire Co., Inc., has had little effect upon the company's output of hair pins and wire for screens and baskets. "We are working 24 hours a day, six days a week; priorities have had little effect upon our business and civilian production has been cut less than 10 to 15 per cent in six months," said general manager Christy S. Madison.

Now, More than Ever * * * * *

THE **WILL** TO MAKE GOOD STEEL

In peace time "the will to make good steel" was a matter of our pride. Now with our country in a bitter war "the will to make good steel" and to make the greatest quantity of it in the shortest time possible becomes a matter of plain duty.

The Copperweld Steel Company is producing especially for our country's war needs the following Aristoloy steels: RIFLE AND GUN BARREL QUALITY, GUN QUALITY, SHOT QUALITY, BULLET CORE AND AIRCRAFT QUALITY.



COPPERWELD STEEL COMPANY WARREN, OHIO

**ARISTOLOY
STEELS**

CARBON TOOL STEELS

STAINLESS STEELS

AIRCRAFT QUALITY STEELS

ALLOY TOOL STEELS

NITRALLOY STEELS

BEARING QUALITY STEELS

"SPECIAL QUALITY" TOOL AND ELECTRIC FURNACE ALLOY STEELS

Structural Shipments and Bookings Down in December

••• Shipments of fabricated structural steel in December totaled 176,126 tons, compared with 182,593 tons for the previous month and 155,526 tons in December, 1940, according to the American Institute of Steel Construction. New orders for the month totaled 146,379 tons compared with 184,043 tons for November, 1941, and 203,124 tons for December, 1940. De-

cember bookings were the second lowest of the year, comparing with 128,658 tons for October, the smallest total, and 184,043 for November. Since August, shipments have exceeded new orders.

Total shipments in 1941 were 2,251,089 tons, compared with 1,515,543 in 1940, and bookings were 2,296,954 tons compared with 1940's figure of 1,748,144 tons. Orders on hand for fabrication during the first third of 1942 total 626,026 tons.

New Survey Starts Among Metal Users

Washington

••• Launching the most detailed statistical study of the metals industries ever undertaken, WPB's Division of Industry Operations recently sent questionnaires to 10,000 manufacturing users of scarce materials. The purpose of the study is to show for the first time in just what shapes and forms raw materials now flow through the productive mechanism and to demonstrate how much of each is required for that minimum of essential civilian production which must be maintained with the maximum military output. It was stated that the study will also reveal those comparatively unimportant uses which are "still draining away metals and fabricating facilities vitally needed in the production of weapons of war."

Uses of more than 250 shapes and types of metals are to be reported on by the manufacturers receiving the questionnaire. The Bureau of the Census, on behalf of WPB will tabulate the returns, on the basis of which will be made decisions governing distribution of critical and strategic materials during the calendar quarter beginning April 1. All returns must be filed with the Census Bureau by Feb. 20.

The form to be used in filing the returns is PD-275, an adaptation of form PD-25a, used in connection with the Production Requirements Plan. This will permit manufacturers who will wish to operate under that plan to use the same information to fill out both forms. If only one inventory is maintained, though several groups of products are manufactured, only one form PD-275 need to be filed.

Tool Makers Asked to Leave Civilian for War Jobs

Detroit

••• George W. Cross, Michigan director of the United States Employment Service, has asked all men with tool room experience to take jobs in war production industries immediately if they are unemployed, or working in civilian industries or at trades beneath their maximum skills. Mr. Cross said there is pressing need for tool makers, machinists, and machine tool operators.

Attention: Chief Metallurgist

Dear Sir:

Referring to your recent letter, we are using washing machines to advantage in the production lines before detail inspection and at various operations where an accumulation of oil, cutting compounds, or emery dust was objectionable.

We also found we could clean before anodic treatment of aluminum either as individual parts or batch work. Of course, care must be taken in the stacking of batch work to see that all parts are properly exposed to the spray of the washing machine.

MK-50 as manufactured by The J. B. Ford Company is a solvent-type cleaner which, if used in power washers in conjunction with water, we find very successful in removing mineral and stamping oils from metal surfaces and this material shows no sign of attack on any ferrous or non-ferrous metals.

Very truly yours,

Letter from the Process Engineer of a manufacturer of aluminum parts to the Chief Metallurgist of another large war production plant where many aluminum parts must be processed. The original is on file in the company's Wyandotte office.

• There is a Wyandotte Cleaner for any metal-cleaning problem and for use in all types of equipment. See your local Wyandotte Service Representative for details.



THE J. B. FORD SALES COMPANY • WYANDOTTE, MICHIGAN



In the Vanguard to Victory

● Van Dorn is all-out for Victory. We've geared up for this war since 1939. We enlisted early. Production here has been on a war basis for months.

The great Van Dorn metal working plant has fit perfectly into Government war production plans. We have arms manufacturing experience from World War 1. For 64 years, we have been recognized masters of metal fabrication. Welding — backbone of speed and strength in armament building — is a Van Dorn specialty. Heat treating and machining are others. Our facilities are

among the most modern and complete in industry. *Now, they're all going full speed ahead to Victory.*

Although all our production effort is concentrated on war work, our large, specialized staff of 45 metal-working engineers and designers are free to serve you in developing plans for a more favorable future for your product in post-war selling days.

This Van Dorn Service comes to you at no cost or obligation on your part. Call in one of our engineers for details. Write or phone.

THE VAN DORN
IRON WORKS COMPANY

2685 EAST 79th STREET • CLEVELAND, OHIO

THE LARGEST BUILDERS OF PRISON EQUIPMENT IN AMERICA

Types of Barbed Wire Reduced by A. S. & W. Co.

Cleveland

••• In the interests of conservation of materials and simplification of product, American Steel & Wire Co. has revised its galvanized barbed wire types. All two-point barbed wire will have a uniform spacing of 4-in. between barbs and all four-point barbed wire a uniform space of 5-in. between barbs.

After present stocks are sold out there will, therefore, be no differentiation between the former "hog" and "cattle" wire, and only one style spacing instead of two in each brand or style will be available. The revised spacing of barbs will serve satisfactorily all purposes for which barbed wire is designed and at the same time reduce the number of styles of barbed wire jobbers and dealers must stock to serve their trade properly. Six styles will now be produced instead of twelve.

Naval Ordnance Parts Exhibited on WPB Trucks

Cleveland

••• C. Roscoe Terry, state director of the WPB production division of contract distribution announces an experiment whereby the WPB will roll right to the door of Ohio manufacturers' plants exhibits of naval ordnance parts and display prints in an attempt to enlist every possible plant to undertake war work. Two giant display trucks left Cleveland on Feb. 9 for a four-week tour of manufacturing plants in 25 Ohio cities. Field engineers and naval officers accompanied the trucks.

Die Casting Industry Studies Substitutions

Washington

••• Possibility of using zinc and brass die castings instead of aluminum in the manufacture of artillery fuses was discussed recently at a meeting of the technical subcommittee of the Defense Industry Advisory Committee for the Die Casting Industry. D. L. Colwell, chairman of the subcommittee, presided and representatives of the Bureau of Ordnance of the Navy, the Ordnance Department of the Army, and Bureau of Industrial Conservation and industry attended.

FAST • VERSATILE • PRECISE

Detroit Electric Furnaces in jobbing and production foundries are producing many heats both large and small in rapid succession, 8, 16, and 24 hours a day. Detroit Furnaces in ever increasing numbers are today melting Navy "M" and Navy "G" bronzes, red brass, aluminum and manganese bronzes; high speed, stainless and heat resistant steels; alloy grey irons, short cycle malleable, nickel, monel metal and many other special alloys both ferrous and non-ferrous.

Because of its automatic stirring action under non-oxidizing conditions, and the precise control of time, temperature and composition, the Detroit Furnace assures precise chemical and metallurgical control. For all around economy you simply cannot beat the Detroit Rocking Electric Furnace. Write today for further facts.



DETROIT ELECTRIC FURNACE DIVISION
KUHLMAN ELECTRIC COMPANY • BAY CITY MICHIGAN

LUFTWAFFE'S SCREAMER: This 110-lb., high-explosive screamer bomb, which has papier mache whistles fitted on its fins, failed to explode when dropped in England by a Nazi air raid. The whistles are intended to create terror and confusion among the civilian population, but to date have failed in their purpose.

Acme Photo



UDYLITE



Headquarters for ELECTROPLATING, POLISHING AND ANODIZING INFORMATION

For prompt, dependable metal finishing information, call on Udyllite. No organization is better equipped to give you information gained from installing plating, polishing and anodizing departments in many leading manufacturing plants throughout the country.

Trained plating engineers and electrochemists are at your service. These men know metal finishing and they can help you plan a new installation or revise your present one for greater efficiency. They know, also, that you want information quickly.

Udyllite has a complete line of equipment . . . second

to none in terms of quality and efficient performance[†] and supplies . . . for every metal finishing need. Salts, acids, anodes, buffing and polishing materials—everything required.

Call Udyllite for prompt service on your finishing requirements. You pay no more for Udyllite dependability.

① Laboratory where efficiency of Udyllite finishing processes is maintained by constant control. ② Design and layout department where clients may obtain the advice of experienced metal finishing engineers. ③ Laboratory where all Udyllite products are tested under actual plant conditions.

THE UDYLITE CORPORATION

1651 E. Grand Blvd., Detroit, Mich.

New York
60 E. 42nd Street

Chicago
1943 Walnut Street

Cleveland
4408 Carnegie Ave.

WITH PRECISION MACHINED PARTS
REVOLVING ON ANTI FRICTION BEARINGS
IN GREASE TIGHT HOUSINGS



EUCLID CRANES



Typical anti-friction shaft bearings.



Showing short shafts, rugged gears and grease-tight housing of mechanical load brake.



Trolley drives are also especially rugged, mounted on anti-friction bearings and enclosed in grease-tight housing split on shaft centers to afford accessibility.

EUCLID HOISTS

are available in a wide range of types and capacities. Write for Bulletin No. 838.

EUCLID Cranes embody features of design and construction that assure years of satisfactory service with minimum attention.

Modern control units give instant response to every demand of the operator with shock-free pick-up and lowering of the load, smooth movement in all directions and safety under all conditions.

Practical design with excellence of construction are assured by decades of experience and a policy of using nothing but the highest grades of materials.

Short rugged shafts, massive broad-faced gears and liberally proportioned anti-friction bearings are enclosed in dirt and grease-tight housings, yet all are uncommonly accessible.

Euclid cranes are designed to meet specific requirements but all detail parts are standardized and jig-machined. This assures accuracy, interchangeability, low maintenance costs and economy of manufacture which permit giving great value to the purchaser.

Write for catalog describing various types of cranes in capacities from 1/2 ton to 500 tons.



THE EUCLID CRANE & HOIST CO.

EUCLID, OHIO, Suburb of Cleveland

Bethlehem Sets Up Air Raid Precaution System

••• A complete air-raid precaution organization, operating 24 hr. a day, 7 days a week, has been set up for Bethlehem Steel Co. plants and the company's 200,000 employees. The procedure includes wardens, patrol systems, fire-fighting squads, bomb extinguishers, medical and first-aid crews, and safety and maintenance organizations.

The minimum equipment for an auxiliary fire-fighting squad, as outlined in the company's instruction booklet, is indicated as: a pair of leather or asbestos gauntlets and a pair of goggles for each squad member, four water buckets, one sand bucket, a portable water pump, a long handled, flat, square-nosed shovel, two sand bags, two electric lanterns, two packages of copper sulphate, 100 ft. of 1/2-inch manila rope, three steel sheets.

Coming Events

- Feb. 12 to 14—18th Annual Iron and Steel Conference, Del Monte, Calif.
- March 4—American Society for Testing Materials, Cleveland.
- March 26 to 28—American Society of Tool Engineers, annual meeting, Hotel Jefferson, St. Louis.
- Apr. 14 to 17—Packaging Exposition and Conference, Hotel Astor, New York.
- Apr. 15 to 17—Open Hearth Conference, Cincinnati.
- April 15 to 18—The Electrochemical Society, spring convention, Nashville, Tenn.
- Apr. 18 to 24—Foundry and Allied Industries Show, Cleveland.
- Apr. 20 to 24—American Foundrymen's Association, Cleveland.
- Apr. 27 to May 1—American Mining Congress, Coal Show, Cincinnati.
- May 25 to 28—National Association of Purchasing Agents Convention, Waldorf-Astoria Hotel, New York.
- June 21 to 25—American Water Works Association, Chicago.
- Aug. 23 to 30—National Association of Power Engineers, New Orleans.
- Sept. 1 to 11—Building and Construction Trades Council, Atlantic City, N. J.
- Sept. 22 to 24—Association of Iron and Steel Engineers, Pittsburgh.
- Oct. 5 to 9—National Safety Congress Association, International convention, Baltimore.
- Oct. 12 to 16—National Metal Congress and Exposition, Detroit.

Purchasing Agent Defines Priorities

Madison, Wis.

• • • "A priority is the right to ask first for something you can't get anyway," is the motto which F. X. Ritger, Wisconsin state purchasing agent, has framed over his desk. What the state will do about metal for license plates in 1943 Mr. Ritger doesn't know because the A-5 priority assures only enough steel plate for this year's supply. Even dog licenses, of which the state buys about 275,000 a year and which formerly were made of brass, now come in iron.

New Small Manufacturers' Pool Formed of 34 Shops

Allentown, Pa.

• • • A new pool of manufacturers of such articles as hinges, toys, and other non-defense items here has landed its first war contracts, A. A. Cutting of the Pennsylvania office of the Division of Contract Distribution, announces.

The orders, in three contracts, are valued at \$100,000 and are for Diesel engine parts for a prime contractor supplying the Navy. The orders were obtained in record time, a week after the formation of the pool, known as the Lehigh Valley Defense Pool, and is composed of 34 Allentown machine shops and small factories with payrolls ranging from 1 to 210, and totaling 500.

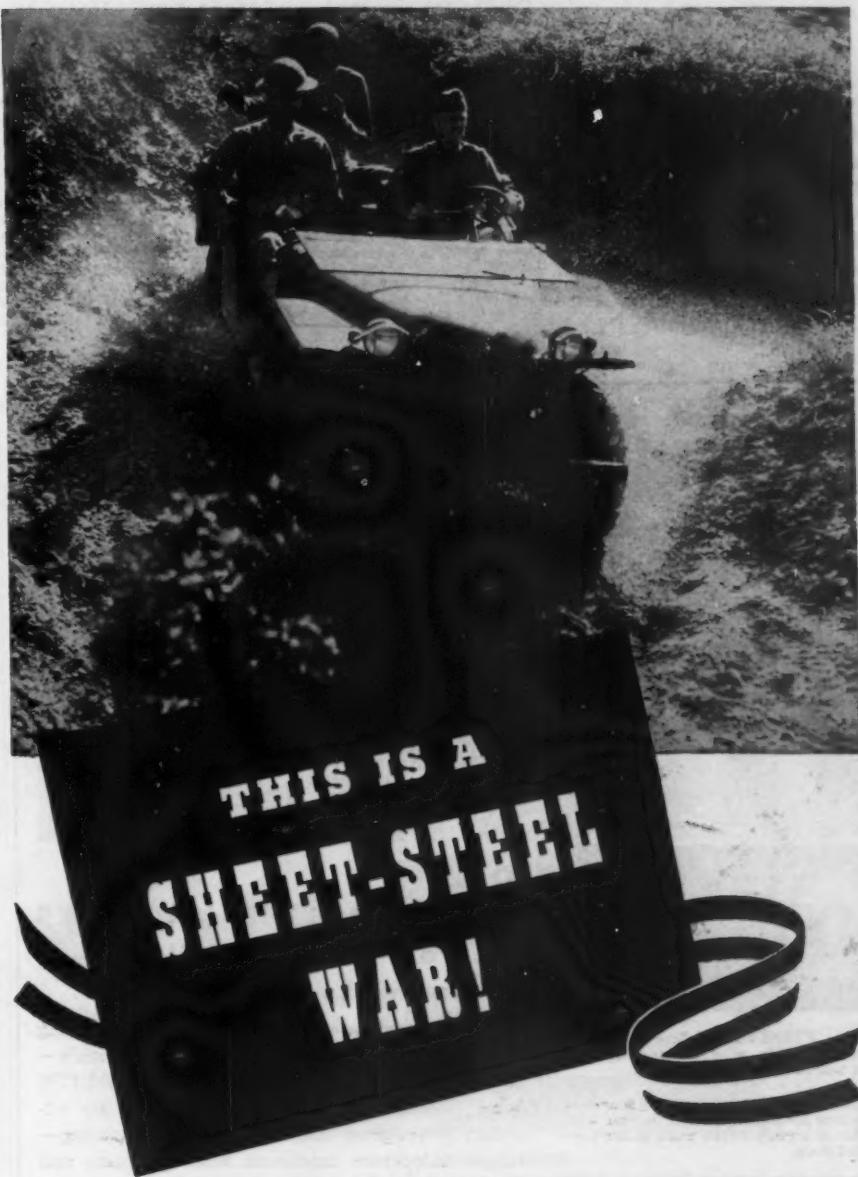
The formation of the Allentown group brings the total small plant defense pools in Pennsylvania to six, with four more being organized.

Industrial Milestones

Cleveland

• • • Franklin G. Smith, president, Osborn Mfg. Co., on Feb. 2 celebrated his 50th year as executive head of his nationally known industrial brush and foundry supply concern. Mr. Smith is 74 years of age. He developed into a \$2,000,000 company the original Osborn Co., of which he took control in 1892 through a \$6000 investment. The concern now employs 700 men. Thirty-three firms which did business with the Osborn Co. 50 years ago are still among the company's customers.

A rough-and-tumble Army "Jeep" made of ARMCO Steel



Back in '17 ponderous equipment and slow-moving stabilized fronts were enough to win wars.

Not so today. *Speed*—on land, on sea and in the air—is America's war-time watchword. So it is only natural that tremendous tonnages of ARMCO metals are used in today's light, fast, mobile equipment.

Most of ARMCO's production is behind America's drive to victory. Troop-carrying trucks and combat cars, parts for aircraft and ships, portable runways and drainage for airports, air-raid shelters, mess equipment, powder cans and land mines are only a few of the many uses.

And even as the ARMCO-invented continuous mills roar defiance to the dangerous challenge, ARMCO's Research Laboratories are working on new steels for these grim days as well as for the days of peace.

Meanwhile, if your friends at ARMCO must say "no" or "perhaps later" to non-defense orders, please remember ARMCO sheet metals are being used for America today so there will be *Americans* to use them tomorrow. The American Rolling Mill Co., 471 Curtis St., Middletown, O.

A TRADEMARK KNOWN TO MILLIONS

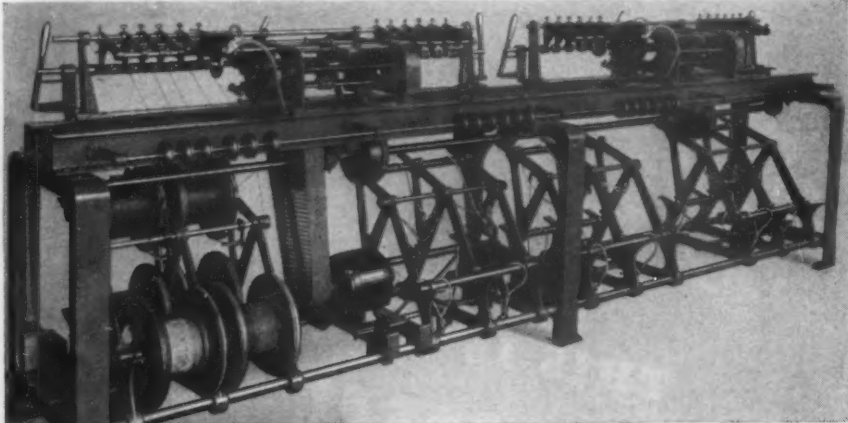


Navy Contracts

... Below is a list of Navy Contracts recently awarded. If you are interested in getting part of this work on a subcontract basis, write your nearest WPB Contract Distribution office. In making inquiries concerning any of the following items, please refer to the letters and numbers given in the

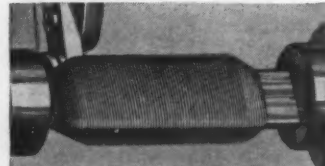
second column. It is WPB policy not to publish names and addresses of firms holding war contracts.

Contract Item	Firm
Tools	NAJ-2230
Cable, steel	NAJ-2607
Generators, turbo	NAJ-2609
Weldments	NAJ-2611
Milling machines	NAJ-2612
Tools	NAJ-2702
Bents, steel	NAJ-2703
Lathes	NAJ-2704



Above: FIDELITY Screw Traverse Machine winds wire on conventional type wooden or metallic spools.

Below: FIDELITY Spooling Machine with new hydraulic control to wind wire on flat or square sticks from brake-controlled reels.

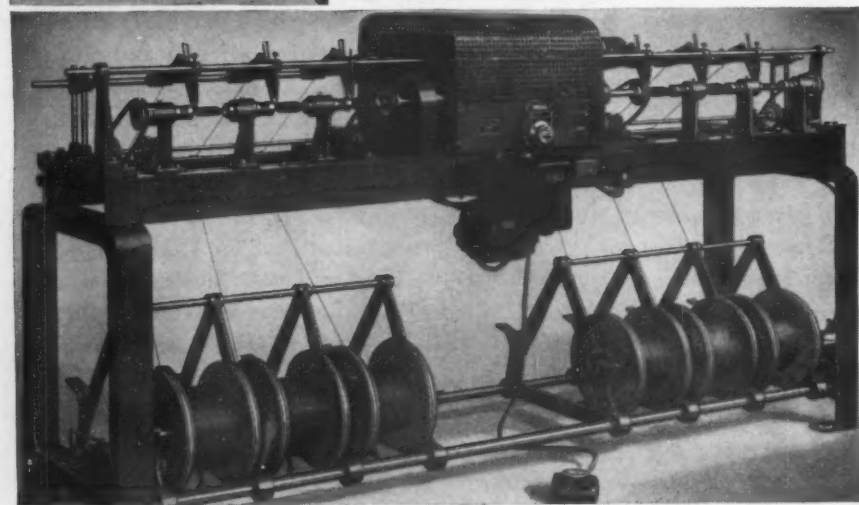


FIDELITY WIRE SPOOLING MACHINES ... from Reels or Coils ... to Sticks or Spools

Precision winding at high speed, with unvarying weight and even lay of wire on spool or stick—these are outstanding advantages of FIDELITY Wire Spooling Machines. They are quickly adjusted to required length, thickness or spacing—simple to operate, minimum labor attention and low horsepower.

Write for illustrated folder describing four types of standard machines and operating specifications.

FIDELITY MACHINE COMPANY
3908-18 Frankford Ave. Philadelphia, Pa.



Contract Item	Firm
Steel	NAJ-2706
Generator, diesel	NAJ-2708
Engines, gasoline	NAJ-2709
Cast steel chain	NAJ-2710
Generators, diesel	NAJ-2711
Sets, generator	NAJ-2712
Fittings, pipe	NAJ-2713
Units, soot blower	NAJ-2714
Molds & molded parts	NAJ-2715
Ambulances	NAJ-2717
Sockets	NAJ-2719
Pumps	NAJ-2720
Gyros	NAJ-2721
Diesels	NAJ-2725
Generators	NAJ-2726
Generators	NAJ-2729
Trucks	NAJ-2730
Turbo generators	NAJ-2731
Steel	NAJ-2732
Tank cleaning	NAJ-2734
Generators, turbo	NAJ-2735
Clamps	NAJ-2738
Engines	NAJ-2739
Boats	NAJ-2740
Engines	NAJ-2741
Trailers	NAJ-2747
Drilling machines	NAJ-2801
Steel, alloy	NAJ-2808
Cylinders	NAJ-2809
Cylinders	NAJ-2810
Sets, welding	NAJ-2812
Winches	NAJ-2813
Ejectors	NAJ-2815
Equipment	NAJ-2816
Trucks	NAJ-2817
Vehicles	NAJ-2818
Coils	NAJ-2819
Blocks	NAJ-2820
Buckles, belt	NAJ-2821
Cable	NAJ-2822
Machines	NAJ-2823
Machinery	NAJ-2824
Machinery	NAJ-2825
Machinery	NAJ-2826
Machinery	NAJ-2827
Machinery	NAJ-2828
Generators	NAJ-2829
Machinery	NAJ-2830
Machinery	NAJ-2831
Diesel engines	NAJ-2832
Blowers	NAJ-2901
Steel, chrome molybdenum	NAJ-3001
Valves, composition	NAJ-3002
Valves	NAJ-3003
Fire & rescue trucks	NAJ-3004
Instruments	NAJ-3006
Engine lathes	NAJ-3009
Turbine generator sets	NAJ-3010
Screws	NAJ-3012
Steering gear	NAJ-3014
Piston rings	NAC-4901
Wrenches	NAC-4902
Welding rods	NAC-4903
Grinders	NAC-4904
Bolts & nuts	NAC-4905
Pulverizing machines	NAC-4906
Valves	NAC-4908
Gages	NAC-4909
Vises	NAC-4910
Indicators	NAC-4911
Parts for grinder	NAC-4912
Electric	NAC-4913
Band saws	NAC-5001
Taps	NAC-5002
Hydraulic feed surface grinders	NAC-5003
Magnetos	NAC-5004
Sheet steel	NAC-5005
Press	NAC-5006
Shackle pins	NAC-5007
Welding rods	NAC-5009
Overbed tables	NAC-5011
Saws	NAC-5012
Shoe repair outfits	NAC-5013
Notary shear	NAC-5101
Steel rods	NAC-5102
Nuts	NAC-5104
Motor trucks	NAC-5105
Pneumatic hoists	NAC-5106
Slip ring	NAC-5107
Working sets, table, case & sterilizer	NAC-5108
Microphones, equipment & spare parts	NAC-5109
Torches	NAC-5110
Tool bits	NAC-5111
Bending roll machine	NAC-5112
Fuel nozzles, check valves, etc., for type S engines	NAC-5113
Wire cloth, expanded metal, etc.	NAC-5201
Gages, spare parts & cuts	NAC-5202
Gages, spare parts & cuts	NAC-5203
Safety valves & spare parts	NAC-5204
Spare parts for Chandler-Evans carburetors	NAC-5205

NAVY CONTRACTS

Contract Item	Firm
Arbor cutters, arbor hold nuts, fly cutter, arbors, vise clamps, saddle tops, etc.	NAC-5206
Forged alloy steel valves	NAC-5207
Centrifuge	NAC-5208
Output power meter, standard-signal generator, etc.	NAC-5209
Expanded metal	NAC-5302
Spares for Sperry compass	NAC-5303
Shaft revolution indicators	NAC-5304
Switch & ballast resistors, carbons for 100 hrs., etc.	NAC-5305
Drills	NAC-5306
Steel plates	NAC-5309
Replacement parts for dry dock cranes	NAC-5310
Mounted chronometer watches	NAC-5311
Test switchboards & spare parts ..	NAC-5312
Portable ventilating sets & spare parts	NAC-5402
Lathe mandrels	NAC-5403
Micrometer caliper	NAC-5405
Propellers	NAC-5406
Tilting kettles	NAC-5407
Lathe wheels	NAC-5408
Fuel oil heater tubes	NAC-5409
Hospital buckets	NAC-5410
Water heaters, spare parts, etc.	NAC-5411
Crucible furnaces	NAC-5412
Hack saw	NAC-5413
Punch, shear & bar cutter machine, motor driven	NAC-5502
Rail & rail clips	NAC-5503
Instrument sterilizers & equipment.	NAC-5505
Combination punch, shear, notch, & bar cutter machine	NAC-5506
Portable ventilating sets & spares.	NAC-5507
Valves	NAC-5508
Nuts	NAC-5509
Fuel spray & air starting valve ...	NAC-5510
Steel cast valves	NAC-5512
Brass air-hose nipples	NAC-5513
Steel forgings	NAC-5601
Screw base receptacle to bayonet lamp base adapter	NAC-5603
Socket-wrench bars & wrenches ...	NAC-5604
Fire extinguishers	NAC-5605
Jig saw	NAC-5606
Forgings for propeller shaft & propeller nut	NAC-5607
Set of broaches for broaching holes ..	NAC-5608
Bearings, bolts, bushings, coils, etc.	NAC-5609
Motor trucks	NAC-5703
Valves	NAC-5801
Safety type, straight razors	NAC-5802
Super service tool sets	NAC-5803
Helical end drills	NAC-5804
Flanges, flanged nipples & welding end fittings	NAC-5805
Steel reamers	NAC-5806
Welding bolts	NAC-5807
Resistors	NAC-5808
Brass nipples	NAC-5809
Saw, abrasive, cut-off, etc.	NAC-5811
Wire	NAC-5812
Abdominal retractors	NAC-5813
Spreader, coil, etc.	NAC-5901
Spare parts for reverse gears	NAC-5903
Sterilizers	NAC-5906
Condenser tubes	NAC-5907
Typesetting machine	NAC-6005
Electric furnace	NAC-6007
Hoists, chain, spur, etc.	NAC-6008
Double ended retractors	NAC-6009
Condenser tubes	NAC-6011
Clocks	NAC-6012
Drilling machine	NAC-6101
Ball tooth universal joint	NAC-6104
Steel, plate, marine, boiler, C.I.C.	NAC-6105
Drilling machines	NAC-6106
Grade BW steel	NAC-6107
Chasers	NAC-6108
Leg irons	NAC-6109
Grinding barrel units	NAC-6111
Wire	NAC-6201

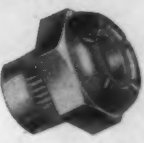
Contract Item	Firm
Diving Amplifier cable & life line..	NAC-6203
Machines	NAC-6206
Portable lubricator	NAC-6208
Copper-nickel alloy	NAC-6209
Name plates for motors	NAC-6301
Brass & steel nipples	NAC-6302
Dies	NAC-6303
Milling machine	NAC-6304
High speed tungsten steel	NAC-6305
Copper	NAC-6306
Welding electrodes	NAC-6307
Bench type drilling machines	NAC-6308
Radio direction finder parts	NAC-6309
Bushings & indicators	NAC-6310
Wire-shore use	NAC-6311
Steel cabinets & folders	NAC-6401
Pressure relief valves	NAC-6403
Synchro motors	NAC-6405

Contract Item	Firm
Shore & marine use wire	NAC-6406
Steel, cast valves	NAC-6407
1/4-in. needle valves & style No. 164 cutting tips	NAC-6408
Brushes, screws & transmitters ...	NAC-6409
Bronze valves	NAC-6410
Pressure composition valves	NAC-6411
Naval flush valve	NAC-6501
Naval-rolled brass	NAC-6503
Antenna wire	NAC-6504
Steel flanges	NAC-6505
High speed steel countersinks, with three spiral flutes	NAC-6506
Voltage regulator, etc.	NAC-6507
Steel galv. wire	NAC-6508
Lathe engine	NAC-6509
Turbine rotor	NAC-6510
Full wave gas filled rectifier tubes.	NAC-6511


A SELF-LOCKING NUT
for every
IMPORTANT FASTENING




STANDARD-HEIGHT HEX NUTS
For all classes of bolted fastenings



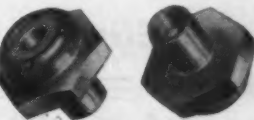
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For insertion in sheet metal




THIN HEX NUTS
For shear bolts with light tensile load




ANCHOR NUTS
For riveting to structures
(numerous types available)



INSTRUMENT-MOUNTING NUTS
For attaching instruments
to control panels



SPLINE NUTS
For insertion in formed
shapes and castings



GANG-CHANNEL NUTS
For multiple blind-mounted fastening of removable panels and covers

ELASTIC STOP NUTS are made in more than 2500 combinations of type, size, material, finish, and thread system . . . to provide safe and economical bolted fastenings for any mechanical or electrical application.

Each nut embodies the Elastic Stop resilient non-metallic self-locking collar that assures a tight hold under all service conditions. Sample nuts for testing are available without cost or obligation. Specify type, size, and quantity.



Catalog contains a graphic explanation of the Elastic Stop principle, presents test and application data, illustrates uses, and lists the complete line of nuts.

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ELASTIC STOP NUT CORPORATION
2368 VAUXHALL ROAD • UNION, NEW JERSEY

Elastic Stop

SELF-LOCKING NUTS

"GREEN AS GRASS . . .
BUT HE DOES GOOD WORK
WITH PHILLIPS SCREWS"



Easy Driving • Elimination of Accidents • Better Work = 50% Less Assembly Cost with Phillips Screws

Assembly jobs that demand extra patience and plenty of time when using slotted screws, can now be handled . . . in a rush . . . by green men . . . who work with Phillips Screws.

Most important — there's no danger of screwdriver slippage. The driver can't slip from the Phillips recess . . . so faster driving methods are practical. Electric and pneumatic power drivers on many jobs where their use had previously been restricted.

Operations are simplified, too.

One-hand starting and driving. Perfect control even when the operator is in an awkward position. No chance for crooked screws, split screw heads or other time wasters.

Altogether, you can depend on *twice the assembly production* with Phillips Screws! Remember *that* for today's conditions when you're interested in saving time. Remember it for tomorrow's conditions when you may be *more* interested in saving cost!

Any of the firms listed below can supply further information.



PHILLIPS RECESSED HEAD SCREWS

GIVE YOU 2 for 1 (SPEED AT LOWER COST)

WOOD SCREWS • MACHINE SCREWS • SHEET METAL SCREWS • STOVE BOLTS • SPECIAL THREAD-CUTTING SCREWS
• SCREWS WITH LOCK WASHERS

U. S. Patents on Product and Methods Nos. 2,046,343; 2,046,837; 2,046,839; 2,046,840; 2,082,085;
2,084,078; 2,084,079; 2,090,338. Other Domestic and Foreign Patents Allowed and Pending.

American Screw Co., Providence, R. I.
The Bristol Co., Waterbury, Conn.
Central Screw Co., Chicago, Ill.
Chandler Products Corp., Cleveland, Ohio
Continental Screw Co., New Bedford, Mass.
The Corbin Screw Corp., New Britain, Conn.
International Screw Co., Detroit, Mich.
The Lamson & Sessions Co., Cleveland, Ohio
The National Screw & Mfg. Co., Cleveland, Ohio

New England Screw Co., Keene, N.H.
The Charles Parker Co., Meriden, Conn.
Parker-Kalon Corp., New York, N.Y.
Pawtucket Screw Co., Pawtucket, R.I.
Phosol Manufacturing Co., Chicago, Ill.
Russell, Burdell & Ward Bolt & Nut Co., Port Chester, N.Y.
Scovill Manufacturing Co., Waterbury, Conn.
Shakeproof Inc., Chicago, Ill.
The Southington Hardware Mfg. Co., Southington, Conn.
Whitney Screw Corp., Nashua, N.H.

WPB to Raise Fire Pump Output, Meet War Demands

Washington

• • • The fire pump industry will be able to meet war time demands for thousands of new fire-fighting units, it was announced Feb. 4 by George Angell, chief of the WPB Fire Equipment and Safety Section. Substitutions for critical materials, suggested by industry members, are: a non-ferrous alloy for bronze; cast iron valve bodies and, steel packing glands instead of brass; galvanized steel tubing for copper and rubber; and any alloy such as manganese, molybdenum, or a carbon steel for stainless steel pump shafts.

The Chrysler Motor Co. and an unnamed firm will each make 100 pumps daily, suitable for trailer or portable skid mounting.

Meanwhile, the formation of a Fire Pump Industry Advisory Committee to consult with the WPB has been announced by the Bureau of Industry Advisory Committees. Members of the committee are:

E. M. Jenkins, president and treasurer, American Marsh Pump, Inc., Battle Creek, Mich.; W. C. Dowd, vice-president, Dayton-Dowd Co., Quincy, Ill.; Carl C. Harris, president, Hunt Rodney Machine Co., Orange, Mass.; E. J. Wendell, president, Hale Fire Pump Co., Conshohocken, Pa., and William K. Sims, chief engineer, LaBour Co., Inc., Elkhart, Ind.

8 Ordnance Plants Go on 7-Day Week

Birmingham

• • • Eight plants engaged in manufacture of ordnance materiel in the Birmingham Ordnance District have gone on a 24-hr., 7-day week basis and several others are operating on nearly a full week, army sources here assert.

These sources said that production at still other plants is being stepped up as rapidly as employees can be trained to provide additional labor shifts and as additional raw materials, now being diverted from non-defense use, is being made available for war production.

The Birmingham Ordnance District comprises Alabama, Georgia, Florida, Mississippi and Louisiana. More than \$22,000,000 in contracts is being administered by the district in Birmingham and its neighboring area in North Alabama.

McLaine, Camp, Myers Promoted by U. S. Steel

• • • The appointments of W. Everett McLaine as Director of Public Relations and Edward C. Myers as assistant director of Public Relations for United States Steel subsidiaries in the Pittsburgh district have been announced. At the same time it was stated that Walter E. Camp will become assistant to J. Carlisle MacDonald, assistant to the chairman of the board of directors of United States Steel Corp., in New York, who, for the chairman of the board of directors, exercises general direction of public relations activities of the corporation and its subsidiary companies.

The Public Relations offices for the Pittsburgh district will be located at 436 Seventh Avenue. Working directly under the president of United States Steel Corp. of Delaware and the presidents of the subsidiary companies in the Pittsburgh district, Mr. McLaine will be responsible for all Public Relations functions of these subsidiaries in the Pittsburgh district.

Mr. McLaine has been in charge of the Public Relations activities in the Washington office of United States Steel Subsidiaries. Mr. Myers has been on the public relations staff of United States Steel Corp. of Delaware in Pittsburgh. Mr. Camp has been director of public relations, Pittsburgh district, Carnegie-Illinois Steel Corp.

Chrysler to Build First Plane Engines in Canada

• • • Canada is to embark on the manufacture of Ranger aircraft engines, R. P. Bell, Director-General of Aircraft Production, has announced. The engine will be produced by Chrysler Corp. of Canada, Ltd., at Windsor, Ont., and the company's production quota has been set at 300 per month. The Ranger is a trainer plane engine which has been adopted by the United States, Mr. Bell said. "This will be the first attempt to manufacture aircraft engines in the Dominion," he said. "In the past engines were imported to be fitted into the fuselages built here, but now Canada will be able to produce completely equipped planes."

WANTED:



one gypsy
on our payroll!

Maybe a crystal ball would help! Anyway, we'd sure like to know how you're going to use that steel you order. The answer might save *you* a peck of trouble!

A small detail, for instance, would have saved hours of vexation for a steel user recently. Hunting 300 pounds of *cold drawn* .45 carbon bars, he found his high priority useless—there wasn't a pound in town. Meanwhile, a complete stock of *ground* bars—same analysis, entirely satisfactory for the job—snugly nestled in a Frasse warehouse just nine blocks away!

To get steel faster, to save yourself time and energy—don't depend on fortune telling. Give details when you need steel. Tell how it is being used, and for what purpose. Chances are you'll lose less time playing detective.

And talking about saving trouble—when you want competent technical advice on steel, why not use Frasse Technical Service, *Peter A. Frasse and Co., Inc.*, 17 Grand Street, N.Y.C. (Walker 5-2200). 3921 Wissabickon Avenue, Philadelphia (Radcliff 7100-Park 5541). 50 Exchange Street, Buffalo (Washington 2000). Jersey City, Hartford, Rochester, Syracuse, Baltimore.



Frasse Mechanical Steels

SEAMLESS STEEL TUBING • COLD FINISHED BARS
STAINLESS STEELS • SAE ALLOY STEELS • DRILL ROD
COLD ROLLED STRIP AND SHEETS • WELDED STEEL TUBING

War Topic Procedure Outlined For Lincoln Welding Awards

Cleveland

••• A five-point procedure for handling contest papers on war subjects for submission to the James F. Lincoln Arc Welding Foundation in the current \$200,000 industrial progress award, which closes June 1, has been outlined by the foundation as follows:

1. Submit the proposed subject for the "progress program" paper, via the local inspector of the department concerned, to the proper bureau of the Navy or Army for official approval. Address communications to the department, attention of the bureau concerned and *before mailing it*, have it approved by the employer if the subject involves work done by the employer.
2. After the subject has been ap-

proved, proceed promptly with preparation of the paper.

3. In writing the paper, avoid including any information which might aid the enemy.

4. Submit the paper, via the same channels as for submission of the subject, (paragraph 1), to the proper department of the Navy or Army, to the attention of the bureau concerned for official approval of its contents before submitting it to the James F. Lincoln Arc Welding Foundation.

In the letter of transmittal accompanying the submission of the paper for official departmental approval, the author should call the department's attention to the provision in the rules and conditions of the progress program that the author may withhold permission for publication of the paper without affecting the rating of the paper for award.

5. After official approval has been given the contents of the paper, submit the paper in accordance with the requirements of the James F. Lincoln Arc Welding Foundation governing papers.

No one, the foundation said, should conclude a subject of war production not admissible until officially and finally so designated by the proper bureau of the Army or Navy.

The progress program offers 458 awards ranging from \$100 to \$13,700 for papers describing advances and improvements resulting from the application of arc welding to design, manufacture, fabrication, construction, welding service or maintenance of any type of machine, building, product or structure.

CDB Offices Opened in Detroit and Iron Mountain

Detroit

••• A financial section of the Contract Distribution Branch, War Production Board, has been established in Detroit, under direction of Charles W. Renfrew. This unit will discuss financial problems with prime and subcontractors, will assist in preparing figures and in negotiating with governmental agencies. Its function will be to see that production of war material is not handicapped by lack of capital on the part of manufacturers.

Another Contract Distribution office was opened in Iron Mountain on Feb. 3, to assist industries in the upper Peninsula of Michigan. George A. Dimmer, production engineer of the Detroit staff, is acting manager.

Specify R-S Furnaces

★ ★ ★ ★ ★ OBTAIN THE FURNACE YOU WANT WHEN YOU WANT IT

Time is short. The urgent and unprecedented demand for the implements of war necessitates the full time of experienced hands and minds. R-S Furnaces, designed by experts and proved by experience, are being operated for the heat treatment of steel and other metals used in the manufacture of tanks, planes, ships, guns, mechanized transports, armour plate, shot, shells and armour piercing projectiles. R-S pledges its enthusiastic cooperation and unstinted effort in the all-out production program.

Due to the foresight of R-S Engineers, the furnace you want can be ready for operation sooner than you might reasonably expect.

It will be advantageous for you to discuss heat-treating problems with R-S Engineers.

R-S PRODUCTS CORPORATION
4524 Germantown Ave.
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R-S Furnaces of Distinction

Alternate Steels Announced by A. I. & S. I.

• • • Four completely new series of alloy steels designed to make the nation's limited reserves of strategic metals go further and help build more guns, tanks, battleships and airplanes have been announced by the American Iron and Steel Institute. In making the new steels, producers will use less virgin chromium and nickel, and more of these alloys in the form of scrap recovered from steel previously produced.

Details of new steels are announced in a booklet entitled, "Possible Alternates for Nickel, Chromium and Chromium-Nickel Constructional Alloy Steels." The booklet was prepared at the request of the Office of Production Management, which has been succeeded by the War Production Board.

To develop the series of new steels, a group of metallurgists chosen from technical committees of the Institute, the Society of Automotive Engineers, and from alloy manufacturing companies, devised hitherto untried chemical compositions, melted experimental heats of the new steels, tested them thoroughly and selected those which seemed suitable.

The placing of priority orders on nickel and chromium, because sufficient supplies were not available, made it necessary to develop suitable alternates. Those presented in the booklet embrace a series of carbon-molybdenum steels, manganese-molybdenum steels, and also low chromium-molybdenum and low nickel-chromium-molybdenum steels.

The use of the alternate steels, the booklet states, may make necessary some changes in established methods of fabrication or heat treatment procedures, or both, or may even make necessary some changes in engineering design of the product affected.

Waste Dealers Plan Convention

• • • The National Association of Waste Material Dealers, Inc., for the second time in its history is planning a wartime convention, to be held March 17 and 18 at the Hotel Astor, New York. Carlton B. Overton heads the convention committee.

National Earns \$17,102,350

Pittsburgh

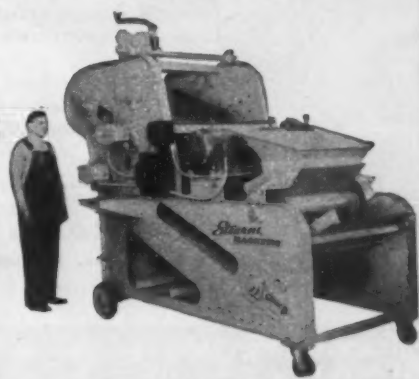
• • • National Steel Corp., in a preliminary statement subject to audit, reports net earnings for the year 1941 of \$17,102,350, equal to \$7.75 a share on capital stock, compared with \$15,066,341 in 1940 which was equal to \$6.83 a share. Federal normal income and excess profits taxes amounting to \$19,-

825,000 were provided for in 1941, compared with provision of \$7,447,695 in 1940.

Earnings for the fourth quarter of 1941 were \$4,180,078, equal to \$1.89 a share, compared with \$4,225,213 or \$1.92 a share in the corresponding 1940 period.

E. T. Weir, chairman, stated that 94 per cent of National Steel's production at present is applied directly or indirectly to the war.

Stearns MAGNETIC PULLEY SEPARATORS pay for THEMSELVES



"Does in SIX HOURS what formerly took 3 DAYS..."
"Replaces FIVE old separators..."

These are facts from actual users that prove Stearns Magnetic Separators definitely profitable investments. . . . Conservation of metal is a "must" these days but to do it economically, automatically, smoothly on such jobs as reclaiming brass, aluminum and other secondary metals from borings, chips and metal refuse requires well designed and well built Stearns Magnetic separating equipment.



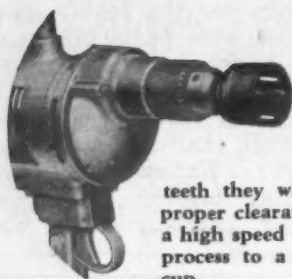
If you are interested in increasing the value of your scrap metal write for this Bulletin 302. No obligation. Investigate Stearns Magnetic methods.

STEARNS MAGNETIC MANUFACTURING CO.

635 S. 28th St. Milwaukee, Wis.

SEPARATORS DRUMS ROLLS
CLUTCHES BRAKES
SPECIAL MAGNETS

MARVEL SAWS



You can increase drill press capacity and portable drill utility with these MARVEL Hole Saws.

These blades cut holes up to 1 1/8" deep from 3/4" to 4 1/8" diameter in any metal. With high speed steel teeth they will not "burn"; have the "set" to give proper clearance for chips on deep cuts; and provide a high speed cutting edge which is welded by patented process to a non-breakable vanadium steel body or cup.

MARVEL Arbors for these saws have tough, hardened hexagon shanks, fitting either 2 or 3 jaw chucks with high speed pilot drills or centering point.

MARVEL Hole Saws will save time and money in cutting large diameter holes anywhere. Use them for economy in production and service.



ARMSTRONG-BLUM MFG. CO. "The Hack Saw People"

5700 Bloomingdale Ave., Chicago, U. S. A.

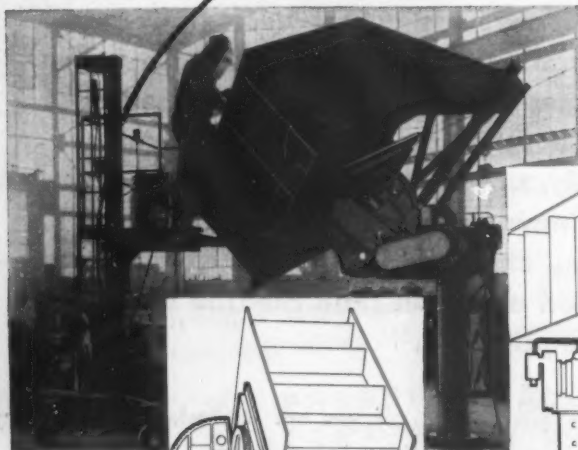
Eastern Sales Office: 199 Lafayette St., New York

ARMSTRONG-BLUM MFG. CO. "The Hack Saw People"

5700 Bloomingdale Ave., Chicago, U. S. A.

Eastern Sales: 225 Lafayette St., N. Y.

C-F POSITIONERS FOR PRODUCTION WELDING



VERTICAL

HORIZONTAL

(ABOVE 45°)

ALL "DOWN-HAND"

● Investigate this fast, economical and safe way of welding fabrication by asking for our booklet WP 20, gladly sent upon request.

CULLEN-FRIESTEDT CO.,

1303 S. KILBOURN AVE.

CHICAGO, ILLINOIS

NEWS OF INDUSTRY

War Demands Tax Structural Mills

Pittsburgh

• • • The imposition of large tonnages of lend-lease material, much of which will be in the form of semi-finished steel, and the great expansion in the nation's shell steel program, are expected to make a heavy impact upon existing rail and structural mills, to say nothing of taxing to an unprecedented extent the steel industry's blooming mill capacity.

While it is generally supposed that rail mills make rails and structural mills make structurals, the war program has forced upon these two types of mill equipment the production of semi-finished steel in the form of blooms and billets, the production of special structural sections, and the production of various shell steel sizes.

The allocation last week of more than 500,000 tons of rails for maintaining and repairing the nation's transportation system during the early part of this year represents a move that was sorely needed but at the same time is not as reassuring as it first appears. This tonnage is a tremendous load upon rail mills which are already bowed down with "must" tonnages involving lend-lease requirements and shell steel production.

If the railroad tonnage already allocated, plus the plate program, plus the various Army and Navy requirements, all coupled with the munitions program, are met at anywhere near the time required, semi-finished mills in the steel industry will be chewing up so much steel that other product finishing units are bound to get less and less material, which in turn will result in a series of finishing mill curtailments which may range for days or weeks intermittently.

There are already serious danger signals which are born out by actual analyses obtained by THE IRON AGE, showing that many steel mills find it physically impossible to produce much, if any, rated tonnage orders carrying labels lower than A-3. Further analyses indicate that total rated backlogs at many steel plants throughout the country are composed of as much as 75 to 80 per cent A-A to A-5 rated business. Such a condition

clearly indicates, according to IRON AGE information, that the chances of other steel orders being filled, even though they have an A-5 to an A-10 rating, are slim in many cases. The situation is bound up, not only in the supply of semi-finished material of which a much more than normal share is going to the heavy products, but also involves a mandatory production of lighter steel products which carry superior ratings and allocations.

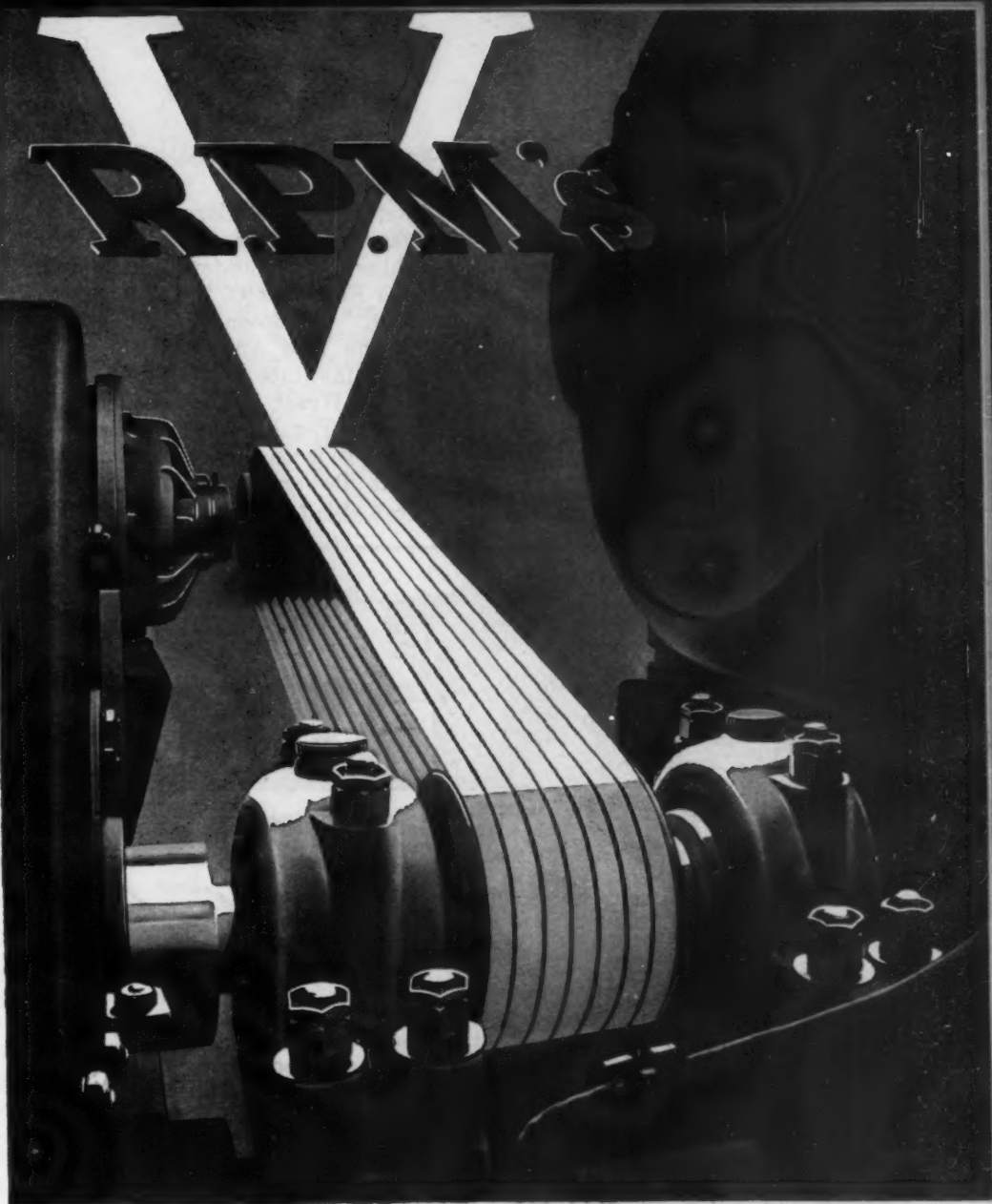
Many observers believe that within the next few months, requirements, which carry A-5 to A-10 preference ratings, will be shoved aside so far that the only way shipment of such material can be obtained will be by increasing the number of outright allocations. Furthermore, within the next month or two, actual rated tonnage will probably be found to include at least 80 per cent in the brackets ranging from A-A to A-3. It goes without saying that non-rated business stands no chance of being fulfilled for the simple reason that steel will not be available.

Canadian Merchant Shipping Output to Equal England's

Montreal

... Canada's output of merchant shipping this year is expected to total almost as much as that of the shipyards of Great Britain, C. D. Howe, Minister of Munitions and Supply, told members of the Engineering Institute of Canada, in annual convention here. He said that submarine sinkings in the Atlantic have forced Canada to switch her shipbuilding facilities from naval to merchant vessels. He also said that Canadian aircraft plants are turning out 70 planes a week.

Of Canada's production program Mr. Howe said: "We are pretty well through the period of getting plants into production. The year 1941 was not a great year in the production of munitions because of the necessity of tooling up and building plants. But even so, in that year we produced munitions valued at more than the whole production of the last World War. Canada's 1942 production will probably be about two and one-half times that of 1941—with still more plants to be built."



EVERY *Revolution* COUNTS IN BRINGING VICTORY

EVERY turn of shaft, wheel, or gear . . . in mine, mill or factory . . . brings the day of victory closer . . . symbolizes the giant productive strength of a united nation dedicated to a single task — producing the arms, munitions, and equipment needed for America's fighting men . . . on land and sea . . . and in the air.

And effective power transmission is fundamental to the job . . . every ounce of productive capacity must be utilized with power transmission appliances — bearings, clutches, couplings, sheaves, pulleys, V-belts — that rule out waste and leakage between source of power and the driven machine.

Depend on Dodge for a complete line — for a greater variety and range of power transmission appliances — with complete stocks quickly available in all industrial centers. Depend on Dodge for seasoned engineering service equal to any emergency demand. Depend on Dodge for . . . "The Right Drive For Every Job" . . . backed by one responsibility.

DODGE MANUFACTURING CORPORATION, Mishawaka, Indiana, U. S. A.



THE RIGHT DRIVE FOR EVERY JOB

Steel Still Needed For Behind-Line Use,

Cleveland

• • • The steel, machine tool, and aircraft industries could "progress more rapidly in their efforts to meet defense needs if they were officially and authoritatively informed of the needs to be met," was the general agreement of speakers R. J. Wysor, president,

Republic Steel Corp., Tell Berna, general manager, National Machine Tool Builders Association, and Frederick C. Crawford, president, Thompson Products Co., at the 16th Annual Foreign Affairs Institute meeting held here.

Mr. Wysor pointed out that although the Allies can produce almost twice as much steel as the Axis Powers, "we have not yet been able to take advantage of the

full weight of that superiority, because a large proportion of our steel production is still needed for uses 'behind the lines'—for the construction and tooling of new armament plants, and for the equipment of new armies. In the Axis countries that phase was completed years ago, while they were preparing for this war."

Mr. Berna paid tribute to "the average American" as "being quick to learn and adaptable" in referring to the thousands of new men that the industry has trained. He added that "new machine tools are going into warehouses" because sufficient contractors have not been secured by Federal agencies to fully utilize machines purchased on "pool" orders. Mr. Berna stressed the importance of "amortization" of new plants by industry, and emphasized that the businessman's fight for this concession was to prevent many concerns from "being smashed after the War just because someone regarded amortization as a simple bookkeeping entry." He indicated that his industry was undismayed by Washington's goal of a \$2,300,000,000 output for 1942, but stated, "We are not sure of winning this war until we get that feeling of urgency and it permeates all of us."

Mr. Crawford pointed out American industry's handicaps to successful mass production of armaments as (1) Not knowing what is wanted; (2) How much of it is wanted; (3) Insufficient time to tool up; and (4) Insufficient raw materials. In spite of this, he stated that in 24 months our aircraft industry will be twice the size of the automobile industry, which took 40 years to get to its present position. He deplored the fact that American complacency allowed the Axis to get such a big jump on the U. S. in aircraft production, but added that nevertheless we have developed "the finest and most dependable airplane engine in the world." Stressing the difficulty of a complete change-over of the auto industry into airplane work, he stated that only 10 per cent of the machinery in the Ford plants were adaptable for use in making airplane engines, and the balance had to be replaced by new equipment.



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SPRING BRACKET — For trailer, made of several pressed steel plates welded to form the assembly shown. Lighter and Stronger.

Arc Welding Film in Color To Speed Defense Training

••• A new Hollywood produced all-color training picture "Inside of Arc Welding," is now ready for release to schools and training groups. This film was produced by Raphael G. Wolff and is designed to speed up the training of the thousands of apprentice welders required for the building of ships, planes, tanks, and other armaments. It illustrates the techniques of arc control and electrode manipulation, and actually shows what goes on inside the electric arc.

Filming of this subject was accomplished with great difficulty by the application of new lighting methods which permitted the camera to pick up the entire welding process. Lighting experts heretofore have claimed it would be impossible to picture the operation of the electric arc, which is one of the most brilliant light sources known and which burns at a temperature exceeding 6000 deg. F. It is believed that this is the first time the process has ever been filmed even in black and white.

The picture consists partly of animated cartoons and partly of the actual welding shots. It features also the antics of "Joe McGee, the Welder," a cartoon character. Complete information on cost and method of distribution can be obtained from the Raphael G. Wolff Studios, 1714 North Wilton Place, Hollywood, Calif.

WPB May Channel Civilian Industry Orders

Washington

••• Concentration of industry is receiving a careful scrutiny by the WPB to take care of dislocated production quotas caused by mandatory conversion in civilian industries. Before Pearl Harbor, limitation orders were constructed to take care of a minimum civilian economy and any conversion was on a haphazard basis, according to the contracts a factory owner could get.

For example, assume that the production of agricultural machinery was limited to 60 per cent of a given base period, and it was figured out that to supply the country no less than 60 per cent could be produced. Then further

assume that companies A and B are approached by WPB officials and told to go 100 per cent defense; then multiply this by 10 as may be actually done. Somebody must produce this machinery because it is the minimum needed.

Therefore, it is expected that WPB will shortly, on a selective basis, channel essential civilian orders to certain companies who

instead of being limited to produce 60 per cent, may be told to make as high as 120 per cent.

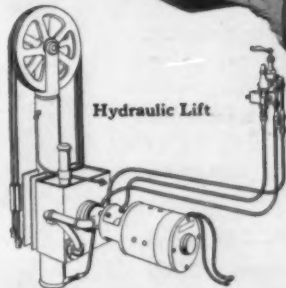
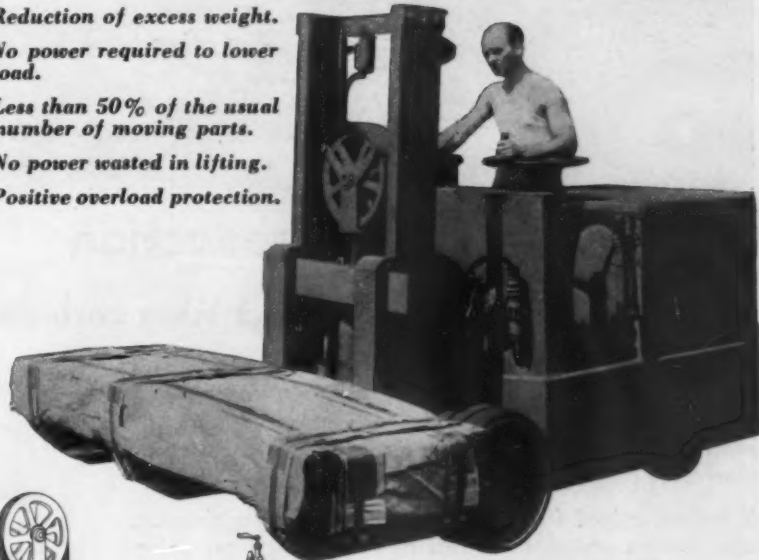
Interesting in this connection, is the question of whether manufacturers have vested interests in quotas assigned to them by the WPB, and may sell or otherwise deal in them. WPB has come to no conclusion on this matter, but an announcement is expected soon.

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- No power wasted in lifting.
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Greater operating efficiency—lower operating cost—lower maintenance cost, that's what the 5 extras of Mercury's Hydraulic Lift mean to you.

Design Is Simple: Heavy gear reduction units and gear cases common with the mechanical lift are completely eliminated. This means

an important reduction in weight . . . less than 50% of the number of moving parts.

Greater Economy: The lift requires no power to lower the load—no power is wasted in lifting. Increased efficiency of as high as 25% in the overall elevating and lowering cycle.

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For the complete story on the Mercury Hydraulic Lift and Mercury Material Handling Equipment write for Bulletin 201-5.

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Fisher Body at Cleveland Will Aid in Diesel Output

Cleveland

••• On the heels of the United Automobile Workers Local 45 of the CIO's contention that the Fisher Body Division of General Motors had failed to obtain defense contracts to keep its 3400 employees busy, the company announced that

this plant would be converted to manufacture parts for General Motors' Cleveland diesel division. It was further reported that if two other important projects under negotiation are obtained for the corporation it is likely to hire between 15,000 to 20,000 men, far more than it has ever employed in the past. The Fisher Body Co. is expected to install about \$3,000,000

worth of machine tools in its Cleveland plant and about 2000 men may be hired to do the diesel work. The machine tool purchases for the plant have been already made in major part and whatever additional orders may be placed will probably be given out of the Detroit headquarters.

National Acme Plans Huge New Plant

Cleveland

••• The National Acme Co. has officially announced plans for immediate construction of a new \$4,000,000 plant to permit a 60 per cent increase in productive capacity. The company, which has been buying equipment for this plant (see THE IRON AGE, Jan. 22), expects to spend \$3,250,000 for the necessary machinery to be installed in the new \$750,000 structure, which will be financed by the Defense Plant Corp. Upon completion, the plant will be entirely engaged in producing automatic bar machines, the company's principal product.

This "third wave" of expansion, according to President F. H. Chapin, will provide employment for 1400 additional workers over the company's present working force of about 3500, which was increased from 1200 at the start of the armament program. The new one-story plant will be of fireproof, steel construction.

Two New Tin Plate Lines For Sparrows Point Plant

••• Two new electrolytic lines for the production of tin plate, with annual capacity of about 2,500,000 base boxes, are expected to be placed in operation by Bethlehem Steel Co. late this summer at their Sparrows Point plant, Sparrows Pt., Md. The process provides a smooth, continuous, uniform tin coating and will effect a substantial economy in the use of tin.

Bethlehem is also installing at the same plant two bonderizing units with a total annual capacity of approximately 1,200,000 base boxes. These units will be in operation late this spring or early this summer. Tin mill black plate so treated can be used after lacquering for some sanitary can ends, and also some general line can tops, bottoms, rings and plugs.



Get Required Production with KENNAMETAL steel-cutting carbide tools

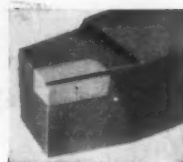
A recent survey revealed that 38% of the plants contacted would go on a 3-shift operation *if they could*. One of the chief limiting factors was lack of certain key machinery—the output of departments containing such machinery putting a limit on total production.

If limited output from your lathes, boring mills, shapers, and planers prevents the rest of your plant from going on three shifts, equip these lagging machines with KENNAMETAL steel-cutting carbide tools and increase the production of your machined parts from 30 to 50%. If you have enough horsepower available you can even *double* your production with these fast-cutting tools.

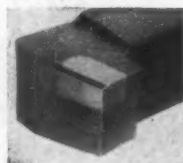


America needs your help — increase your plant production *now*. Send us your B/P or drawings and we will quote you for prompt deliveries on KENNAMETAL tools

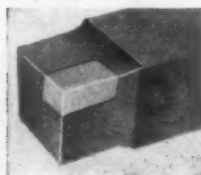
Write for Price List No. 7 containing new, low prices on KENNAMETAL tools and blanks. Do you have our Catalog No. 42?



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D. P. Forbes Nominated President of A. F. A.

• • • **Duncan P. Forbes**, president of Gunite Foundries Corp., Rockford, Ill., has been nominated to succeed H. S. Simpson of National Engineering Co. as president of the American Foundrymen's Association. Mr. Forbes is currently serving as vice-president of the association.

Other officers recommended by the A.F.A. nominating committee include: L. C. Wilson, Reading Steel Castings Division, American Chain & Cable Co., Reading, Pa., for vice-president of the association; J. C. Crown, U. S. Naval Gun Factor, Washington, as a director; I. R. Wagner, Electric Steel Castings Co., Indianapolis, director; S. V. Wood, Minneapolis Electric Steel Castings Co., Minneapolis, director, and W. L. Woody, National Malleable & Steel Castings Co., Sharon, Pa., a director.

Election of the officers will take place at the association's annual convention to be held in Cleveland, April 20 to 24.

3 Tin Can Plants Will Assist Copper Mines

Washington

• • • **WPB's Bureau of Industrial Conservation** has announced plans for the construction of three plants in the Southwest, where tin cans will be prepared for a process in the precipitation of copper from mines. The plants for whose construction DPC has allocated about \$175,000 are to be built in the vicinity of Dallas and Houston, Tex., and Kansas City. Mayors of the cities where the plants are to be situated, as well as heads of neighboring municipalities, have been urged by the Bureau to institute local can collection campaigns in order to assure the plants of a plentiful supply of cans. The plants are expected to be ready for operation by the middle of the coming summer.

After they clean and shred the cans, the metal will be shipped to copper mines, whose copper-sulphate waters, flowing over the metal, it was pointed out, will produce copper equal in amount to the quantity of metal used. The WPB Bureau estimates that the mines using the processed cans will pro-

duce approximately 2000 tons of copper per month.

At the same time that he urged that the mayors inaugurate can collection for the new plants by housewives, Deputy Chief Paul C. Cabot of the Bureau announced that similar collections would be made in the immediate future in the Sewaren, N. J., and Pittsburgh areas where are situated detinning plants.

It was stated that surveys which have been made by experts inter-

ested in the possibility of tin can reclamation indicate that for every 1000 of the population there is a potential return of one ton of cans per month. If the "test" campaigns in the Pittsburgh and Sewaren areas prove successful, the bureau will consider methods of setting up machinery for similar collections in other cities, and for the transportation of the salvaged material to cities where there are detinning plants

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Full Allocation of Machine Tools Expected By March 1

••• Government control of the machine tool industry, the key of the nation's war effort, appeared early this week to be heading toward still stricter Government control of all phases of machine

tool distribution, as well as prices.

Complete allocation of all machine tools will be the next step, according to reliable sources, who predict that WPB will probably issue such an allocation order

shortly, to become effective March 1. This order will probably be paced by an intensive drive for the shifting around of unused equipment on a voluntary basis to provide for full three-shift operation of every machine tool available in the U. S. However, if this voluntary effort to put all machines to work fails, the effort may be bolstered by a mandatory order.

Used machine tools are now covered by preference order E-4, which gives the WPB authority to order the disposition of certain critical machine tools. The usual procedure in these cases, when more than one plant is seeking the same tool, is to issue a stop order, followed by specific instructions as to whom the machine shall be sold.

Numerous surveys of the location and status of idle or partially used machine tools are under way, including one by the automotive section of WPB, which is concentrating its efforts on equipment in automotive plants.

The "critical list" of machine tools covered by the survey undertaken by the Automotive Branch of the WPB include the following: Horizontal boring machines, jig boring machines, vertical boring machines, chambering machines, hobbing machines, deep hole drilling machines, radial drilling machines, turret lathes, gear grinding machines, internal grinding machines, tool room lathes, thread milling machines, engine lathes 24-in. and up, milling machines, planers—36-in. and up, multiple spindle automatic, profiling machines, rifling machines, bar machines, rifle reaming machines and thread grinding machines.

The survey is intended to bring to light any idle tools in the automotive industry.



Repair Shops Aided

••• Priority ratings may be obtained by job platers, machine shops, motor rewinding shops and other shops performing industrial repairs by the filing of Application Form PD-25-a under the Production Requirements Plan (P-90) or Form PD-25-x under the Modified Plan, see THE IRON AGE, Feb. 5, p. 100A, according to the size

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of the business. This was pointed out by WPB Feb. 5, with the qualification that the rating assigned and the quantity of material that may be obtained under a priority rating will depend upon the volume of war or essential civilian work being handled by each shop.

Chromium Control Tightened

••• No chromium may be melted without specific authorization of the Director of Industry Operations according to an amendment to Order M-18-a placing chromium under a complete allocations system, issued by WPB last week. Announcement that this action was to be taken was published in THE IRON AGE of Jan. 29, page 84. Previous orders permitted small quantities to be melted without authorization.

Pig Iron Users Warned

••• A warning has been issued by WPB to users of pig iron that unless form PD-70 is filed on time they will be excluded from allocations for the succeeding month. The form is due on the 12th of each month, and in order to give more time to study requirements, may soon be changed to the 5th of the month. WPB adds that the filing of forms PD-149, 150, and 151, covering scrap iron and steel, does not relieve users from the necessity of filing Form PD-70.

Conveyor Makers Use PD-25a

••• WPB has told producers of conveyor machinery and auxiliary equipment, formerly relying on Preference Rating Order P-78 which expired Jan. 31, for priority assistance, to use the Production Requirements Plan (P-90) Form PD-25a, to obtain ratings. The form should be filed with the Industrial and Office Machinery Branch.

Copper Mills Get High Rating

••• Mills which roll, draw or extrude copper or copper-base alloys have been given priority assistance to obtain repair, maintenance and

operating supplies by a preference rating order P-106, issued Tuesday by WPB.

The order assigns emergency ratings of A-1-a and A-1-c to deliveries of material necessary to repair or avert a breakdown or suspension of operations, and a rating of A-3 to deliveries of material which will be used for repair, maintenance or operation of brass or wire mills,

subject to the restrictions contained in the order.

Order L-23 Modified

••• Manufacturers of domestic cooking appliances will be permitted to use up existing stocks of "bright work" trim containing copper, nickel, chromium or aluminum, accord-

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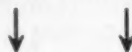
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NEWS OF INDUSTRY

ing to an amendment to limitation order L-23, announced by WPB. As originally drafted, the use of "bright work" after Feb. 1 was banned by the order. However, inventories may not be increased by the fabrication of new trim.



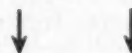
Foreign Oil Plants Aided

• • • Foreign companies purchasing materials and equipment in the United States for the production or marketing of petroleum and petroleum products will be treated on the same basis as United States companies with respect to conservation of materials. Interpretations of conservation orders M-68 and M-68-c issued by WPB explain that the provisions of these orders apply to all deliveries of materials from the United States, whether in this country, in United States territories and possessions, or in foreign countries.



Farm Repairs Rated A-10

• • • Farmers who repair their own agricultural machines, or the repairman who does it for him, may now use an A-10 rating on orders for all necessary materials. This was announced Feb. 9 by WPB as an amendment to the maintenance and repair order, P-100.



Charges Priority Violations

• • • WPB last week took punitive action against two alleged violators of priority regulations. Acme Aluminum Foundry Co., Chicago, was forbidden to accept deliveries or take orders or to make deliveries of aluminum or aluminum scrap for a period of two months, except as instructed by WPB. In order to keep the plant's facilities in operation, the company is to fill essential war orders now on its books and to fill other such orders when its facilities are needed, the WPB said.

The second action was taken against the Hurley Machine Division of the Electric Household Utilities Corp., Chicago, for alleged violation of priority orders dealing with curtailment of production. The WPB ordered complete suspension of production and sale of electric washing and ironing machines marketed by the company.

This Week's Priorities and Prices

Tin used for tin plate reduced to 1.25 lb. per base box from 1.35 lb. according to order M-21-e issued Feb. 3. Quota system set up for tin and terne plate and long ternes. (WPB-131)

Job platers, machine shops, motor rewinding shops and other shops performing industrial repairs eligible for priority assistance under Production Requirements Plan (P-90) by using form PD-25a or PD-25x. (WPB-156)

Copper and copper products may not be sold by mills, warehouses or foundries except on preference ratings of A-10 or higher, according to amendment to order M-9-a issued Feb. 6. (WPB-171)

Conveyor machinery and auxiliary equipment makers made eligible for priority assistance under Production Requirements Plan (P-90) by filing PD-25a. (WPB-129)

Flashlights and flashlight batteries and bulbs removed from emergency price ceiling established Dec. 10 due to return of orderly buying. (OPA-PM2422)

Ambulance chassis production of Cadillac Motor Car division of General Motors Corp. exempted from terms of automobile production ban to permit completion of 719 special units. (WPB-159)

Priority sanctions applied to Acme Aluminum Foundry Co., Chicago, by WPB in Suspension Order No. 10 for alleged violation of priority regulations. (WPB-146)

Copper alloy scrap prices set in amendment to price schedule No. 20 issued Feb. 7. Twenty-four grades covered. (OPA-PM2438)

Titanium pigment prices placed under a ceiling in price schedule No. 98, effective March 1, 1942. (OPA-PM2432)

Auto graveyards warned scrap may be requisitioned by WPB, if yards fail to accept fair offers made by steel mills. (WPB-164)

Iron and steel prices covered by price schedule No. 6 revised with respect to dislocated tonnages, effective Feb. 4. (OPA-PM2420)

Primary and secondary lead and zinc prices revised slightly in amendments to schedules Nos. 3, 81, 69 and 70. (OPA-PM2425)

Kapox use restricted by order M-85 issued Feb. 5 (WPB-155). Ceiling prices established in schedule No. 59 (OPA-PM2396).

Iron and steel scrap prices covered in price schedule No. 4 subjected to several minor adjustments. (OPA-PM2397)

Relaying rail price schedule No. 46 modified. (OPA-PM-2401)

By-product coke price schedule No. 29 extensively revised.

Steel resale price schedule No. 49 clarified by rewording of several sections.

Builders' hardware price schedule No. 40 altered to change the freezing period to 15 days preceding Oct. 15, 1941. (OPA-PM2406)

Cast iron soil pipe and fittings placed under a price ceiling in schedule No. 100 issued effective Feb. 20. (OPA-PM2430)

Steel casting price schedule No. 41 amended to provide for railroad specialties.

Priority form reproduction discussed in Priorities Regulation No. 5 issued Feb. 5. Regulation tells what forms and orders may be reproduced. WPB-152)

Chromium melting without specific authorization of WPB prohibited in amendment No. 2 to order M-18-a issued Feb. 4. (WPB-127)

Railroad equipment priority orders P-8, P-20 and P-21 clarified by interpretations issued Feb. 3 which stress that orders may not be used for plant expansion purposes. (WPB-122)

Preference orders extended include: P-45 to Feb. 28; M-1 and M-1-a to Feb. 28.

Mercury price ceiling established below prevailing market prices in price schedule No. 93, effective Feb. 4. (OPA-PM2417)

Automotive companies requested to report number and status of critical metal-working machines. (WPB-143)

Pipe line application of Trans-America Pipe Line Corp. from Texas to Savannah to be studied by Defense Transportation Committee. (WPB-138)

Typewriter production to be curtailed by orders to be issued shortly. Industry to be converted to war work. (WPB-132)

Petroleum price schedule No. 88 amended Feb. 7 to permit maintenance until Mar. 1 of prices set prior to Nov. 10 on domestic sales and prior to Jan. 20 for export sales. (OPA-PM2456)

Southern hardwood prices placed under a ceiling in price schedule No. 97 effective Feb. 20. (OPA-PM2429)

Can makers ordered to fill Army and Navy orders first. Quotas of tin and terne plate may be adjusted to permit filling all such orders. (WPB-177)

Truck and bus fleet operators to be provided with emergency ration certificates to permit replacement of blown tires and tubes on the road. (OPA-PM2440)

For copies of above announcements address defense agency concerned at Washington, giving announcement number as shown in parentheses after each paragraph. (For example, WPB:100 means announcement 100 issued by the War Production Board.)

Revisions for The Iron Age Priorities Guide

• • • Following revisions are to be made to THE IRON AGE Priorities and Allocation Guide published with the issue of Jan. 29. These items should be suitably cross-indexed.

Under "M Orders," page 8, add:

M-9-a—Amendment (2-6-42). Prohibits sales of copper and copper products by mills, warehouses or foundries except on ratings of A-10 or higher.

M-11-h—February zinc pool. (1-31-42)

M-18-a—Amendment No. 2 (2-4-42). Establishes complete allocation on chromium; melting prohibited without authorization of WPB. *Revokes M-18.* Related form: PD-53a.

M-21-e—Sets tin plate quotas; reduces plating to 1.25 lb. per base box. (2-3-42)

M-39—Amendment (2-7-42). All forms of cobalt, including scrap, set under allocation.

M-39-b—Restricts use of all forms of cobalt, including scrap. (2-7-42)

M-51—Amendment (2-4-42). Directs distribution of

pigs and hogs bristles; gives specifications for non-military uses.

M-85—Restricts use of kapox. (2-4-42)

Under "L Orders," page 7, add:

L-23—Amendment No. 1 (2-7-42). Tightens restrictions on use of critical materials in production of cooking appliances.

Under "E Orders," page 7, add:

E-4—Sets controls over sale and delivery of second hand machine tools. (2-3-42)

Under "S Orders," page 7, add:

S-10—Suspends operations at plant of Acme Aluminum Foundry Co., Chicago, for priority violations. (2-4-42)

S-11—Suspends production and sale of electric washing and iron machines by Hurley Machine Division of Electric Household Utilities Corp., Chicago, for priority violations. (2-6-42)

Under "Miscellaneous Orders," page 7, add:

Priorities Regulation No. 5—Lists regulations covering reproduction of forms and orders. (2-5-42)



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NEWS OF INDUSTRY

How to Reproduce Priority Forms and Orders

Washington

• • • All priority forms and orders, with a few exceptions, may now be reproduced, according to the terms of Priorities Regulation No. 5, issued Feb. 5 by the WPB. The regulation applies to all documents heretofore issued, and to those issued in the future, except in cases where reproduction may be specifically prohibited.

Copies of any order which contains the name and address of the producer or other person to whom the order is issued, or a serial number identification, may not be reproduced unless the name and address and serial number printed on the order or the order should be clearly marked "Information Copy."

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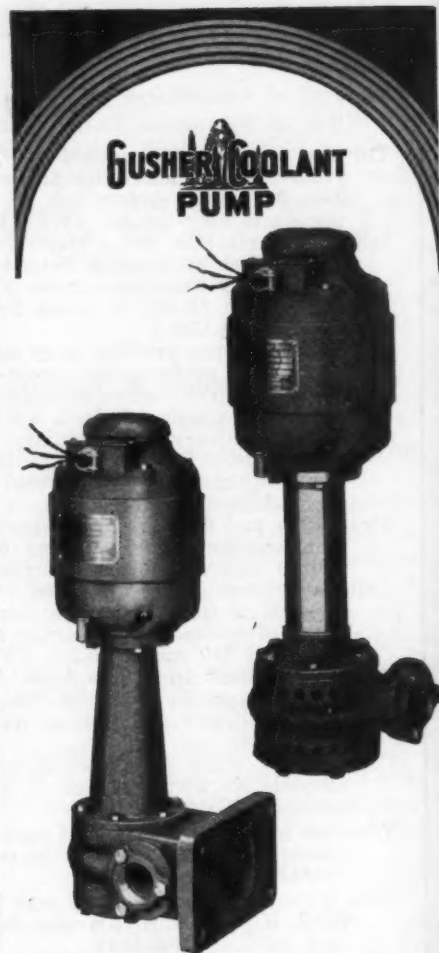


Priority Subcontracting Field Offices Merged

Washington

• • • WPB last week ordered the merger of the 45 field offices previously maintained by the Priorities Division and the 113 offices operated by the former Division of Contract Distribution into a new Bureau of Field Operations to be responsible to the Division of Industry Operations.

Minor administrative decisions



KEEP your Machine Tools YOUNG!

Don't let the steady flow of defense work in your plant be tied up by a tardy machine tool. Insure the satisfactory and continuous functioning of your machines by using Ruthman Gusher Coolant Pumps.

They really do a good job—so much so that they are now standard equipment on many well-known machine tools. Therefore specify Ruthman Coolant Pumps—the pumps that keep your cutting tools young.

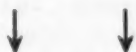
The
RUTHMAN
Machinery Company
CINCINNATI, OHIO, U.S.A.
1821 Rending Road

NEWS OF INDUSTRY

on priorities and subcontracting will be handled by the Bureau of Field Operations offices, but matters of general policy will be for the consideration of the Washington staff.

L. Edward Scriven, formerly in charge of the priorities field offices, will head the Bureau, and Walter H. Wheeler, former Deputy Director of the Division of Contract Distribution, will remain in charge of subcontracting staff activities under William H. Harrison in the Production Division.

As the two field staffs are merged the field offices will report to Washington through the Bureau of Field Operations and this Bureau will handle any clearances which may have to be taken up with the Bureau of Priorities or with the Subcontracting Section of the Production Division.



Export Licenses Revoked

Washington

••• The Board of Economic Warfare, Export Control Office on Feb. 9, revoked all general export licenses for electrical machinery, iron and steel manufactures, and agricultural implements. However, shipments may continue to be made to Great Britain, Northern Ireland, Newfoundland, Greenland, and Iceland.

Monarch Machine Tool Plans 65% Output Gain

Sidney, Ohio

••• Monarch Machine Tool Co. expects to "achieve an additional 65 per cent increase in production in 1942," according to a letter of Wendell E. Whipp, president, to company stockholders. The letter stated the company will lease \$695,000 of machine tools from Defense Plant Corp. By compressing the present machine layout it will be possible to absorb these additional tools within the present buildings and add 400 more men. The company shipped \$15,219,219 of lathes in 1941, as compared with \$7,137,375 in 1940. After \$4,631,322 in taxes, the company earned \$1,500,424 in 1941, as compared with net earnings of \$1,183,106 in 1940, after taxes of 1,550,040.

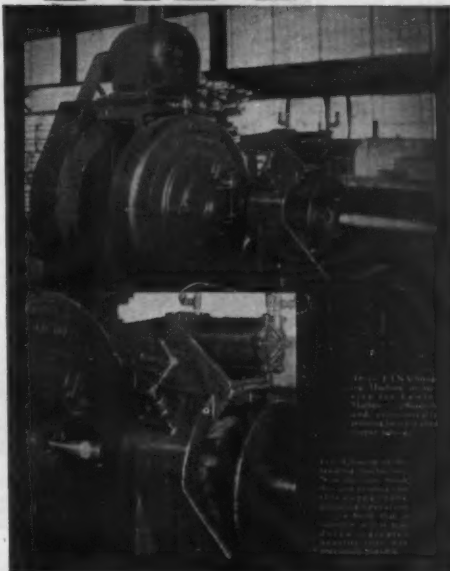
LEWIN-MATHES *Got the right answer at*

ETNA

They had a job of pointing heavy-walled copper tubing, and wanted to speed up the operation. Just how to do it didn't appear on the horizon, and so Lewin-Mathes did the safe and logical thing—they put their swaging job up to Etna.

The answer to that problem is illustrated on this page. It's a modern Etna Swaging Machine that points *more* copper tubes per hour in less time at less cost. If you have a problem involving tapering or reducing tubing and solid rounds—ask Etna about it.

Etna has the swaging machines from $\frac{3}{8}$ " to 4" and the experience to help you get the most out of this type of machine.



IF IT'S A QUESTION OF TAPERING, SIZING OR REDUCING OF ROUND SOLIDS OR TUBING...

Ask **ETNA** About Swaging

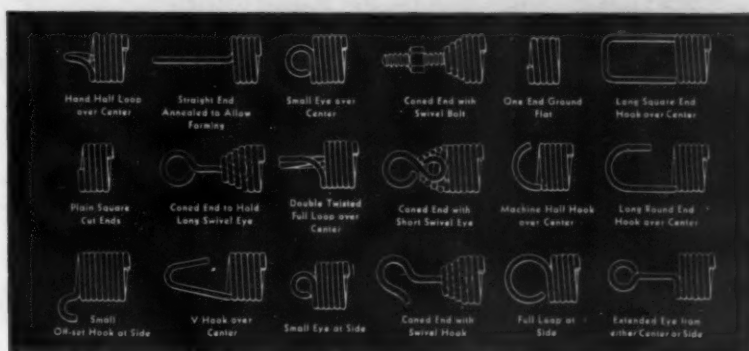
ETNA

MACHINE COMPANY
TOLEDO OHIO

the practical side of Springmaking — BY DUNBAR

There's an end to everything even a SPRING —

and for extension springs here are the various possibilities:



Make sure you get the right spring with the best loop or hook.

It pays!

Dunbar Bros. Co.

DIVISION OF ASSOCIATED SPRING CORPORATION
BRISTOL, CONNECTICUT
"Quality Springs since 1845"

750 Stove Workers May Lose Jobs

Milwaukee

••• Growing shortage of material in the home appliance field may force the A. J. Lindemann & Hoverson Co., stove manufacturers, to lay off about 750 employees in about a month. The company holds enough material in its ware-

houses for about three months' production but has not been able to secure release from the government.

P. M. Road Buys 250 Flats

••• Pere Marquette Railway Co. has placed an order with Greenville Steel Car Co., Greenville, Pa., for 250 flat cars, 70-tons capacity each.

Buick Aluminum Foundry to Be Among World's Largest

Detroit

••• Buick division of GM is breaking ground immediately for one of the world's largest aluminum foundries at Flint, Mich., with a \$10,000,000 authorization for plant and equipment. It will supply parts for Buick's aircraft engine production and for all other GM radial aircraft engine output. It is expected to be in production this summer. It will double Buick's normal foundry employment and will be headed by William G. Mixer, foundry superintendent.

Put U. S. Order First, Knowlson Tells Can Manufacturers

Washington

••• Telegraphic instructions were sent last Saturday to can manufacturers by J. S. Knowlson, WPB Director of Industry Operations, to fill Army and Navy orders first and to ask for more tin or terne plate if necessary. Quotas of tin plate and terne plate were given can manufacturers on Jan. 27. Upon delivery of amounts in excess of the quotas, can manufacturers were required to submit to Walter C. Shorter, Chief of WPB's Container Branch, a sworn statement concerning the additional requirements.

Last Week's Auto Output 37,125 Units

Detroit

••• The final weekly report on automobile production released by Ward's Reports, Inc., estimated output for last week at 37,125 vehicles compared with 73,305 in the previous week and 127,675 last year in the corresponding week. Output from now on will be primarily in trucks and military classifications and will not be publicized.

Railroad Item Corrected

••• In its article Jan. 29 on railroad steel requirements THE IRON AGE, page 104, carried under the head "Rolled Steel Sheets" a figure of 197,733 tons. The head should have been "Rolled Steel Wheels."

Cincinnati

HERRINGBONE GEARED

**HYPRO
OPENSIDE
PLANERS**



When buying a modern planer check these features:

MAGNETIC DIAL FEEDS (Patented)
Individual for rail heads and side heads. Feeds selectable by 64ths from 1/64" to 1" with a twist of the wrist. Feeds may be changed at any position or direction of table travel. Heads may be fed at either end of table stroke.

STEEL TEE SLOT INSERTS (Patented)
Table Tee Slots are fitted with steel inserts so that lower edges will not be damaged by bolt heads. This construction prevents pulling out of tee slots insuring perfect condition of table throughout life of machine.

DOUBLE BRONZE NUTS

Used on all down feed and cross feed screws in all saddles and slides. This construction provides double life for all screw movements as all thrust and wear is taken by two nuts instead of one.

EXTENDED SADDLE AND HARP

To provide extra support for the slides along with an additional long-leverage bolt circle producing maximum rigidity between saddle and harp.

Examine the Hypro Openside Planer critically. Full particulars in our new Bulletin No. 110 sent free on written request.

PLANERS • PLANER MILLERS • BORING MILLS

THE CINCINNATI PLANER CO.

CINCINNATI, OHIO

On the Assembly Line

[CONTINUED FROM PAGE 72]

However, only a minority of people can be found who use the word "automotive" in this all-inclusive manner, hence the proposed change. Besides this, *Automotive Industries*, magazine of the industry, has changed its name to cover the enlarged scope of its present activities and hereafter is to be known as "*Automotive and Aviation Industries*."

Selection of departmental heads under Ernest C. Kanzler, chief of the Automotive Branch of the War Production Board, serves to indicate somewhat the pattern under which the Automotive Branch will function. It becomes apparent that Kanzler does not intend to have divisional heads in charge of specific military products, that is, a tank chief, an airplane chief, etc. Instead his organization will be formulated along departmental lines with engineering, production, labor, and materials departments playing the most prominent parts.

Kanzler has appointed Irving J. Reuter, former president of Buick Motor Co., as his associate. Reuter, nearing his 57th birthday, has been retired since 1933 and has lived at Biltmore, N. C. A graduate of Purdue in 1907, he was with Remy Electric Co. from 1909 to 1925, first as assistant engineer, then factory manager and later general manager. In 1925 he became general manager of Olds Motor Works, remaining in that position four years. In 1930 and 1931 he was president and general manager of the Oakland Motor Co. In 1930 he was also engineering director of Opel Motor Works, a German subsidiary of General Motors Corp. He was president and general manager of Olds Motor Works and Buick Motor Co. from 1931 until his retirement.

(Kanzler early this week appointed Fred L. Flanders, Charles B. Hartner and W. C. Klann and E. C. Brandt. Klann will supervise conversion of a group of auto companies.)

First action of the Automotive Branch has been to survey the industry to determine the number, status and use of a group of 25 so-called critical metal working machines. Kanzler sent telegrams to all truck and automobile manufacturers and about 150 of the largest parts suppliers of the in-

dustry. This survey was said to be a necessary preliminary to allocating orders for more military goods.

The critical list released by Kanzler read as follows: horizontal boring machines; jig boring machines; vertical boring machines; chamfering machines; hobbing machines; deep hole drilling machines; radial drilling ma-

chines; turret lathes; gear grinding machines; internal grinding machines; tool room lathes; thread milling machines; engine lathes, 24 in. and up; milling machines; planers, 36 in. and up; multiple spindle automatic profiling machines; rifling machines; bar machines; rifle reaming machines and thread grinding machines.

DON'T PAY THIS TAX

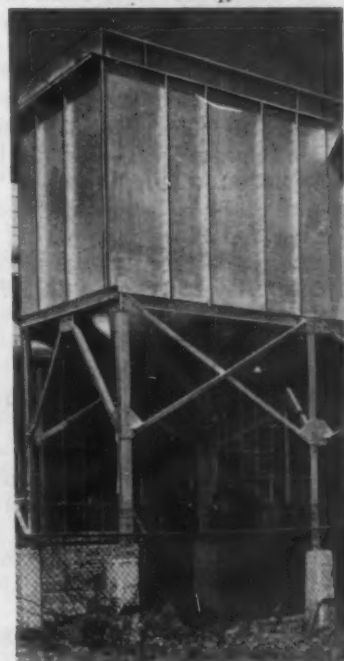
THE tax that is ignored is often the one that hurts most.

The dust tax is like that. You pay it without realizing it is there. It shows up in higher insurance rates, increased labor cost, and expensive repair bills.

Moreover, the fact that you have dust collecting equipment does not always mean that your dust condition is under perfect control. The dust you cannot see is what should concern you most. This is especially true of dusts ranging from 2 to 10 microns in size.

When you consider that it is possible to place more than 3000 dust particles of $2\frac{1}{2}$ micron size on the head of a common pin, the necessity for high efficiency dust control becomes apparent.

American "Dustubes" provide this kind of protection at surprisingly low cost. They are extremely simple in design and are easy to operate and maintain. Hundreds are in daily use throughout industry.



AMERICAN FOUNDRY EQUIPMENT CO.

510 S. Byrkit St.

Mishawaka, Ind.

DUSTUBE DUST COLLECTORS

PERSONALS

• **A. W. Thorsen** has been appointed to the staff of the coal research laboratory at Carnegie Institute of Technology, Pittsburgh. He formerly was assistant fuel service engineer for the Chesapeake & Ohio Railway Co. at Detroit. Mr. Thorsen will assist the president, Robert E. Doherty, in securing financial support for the laboratory and will also assist Dr. H. H. Lowry, director of the laboratory, with its general business operations. He is a graduate of the University of Missouri and before his connection with the Chesapeake & Ohio, was employed by the Detroit Edison Co.

• **Edward M. Hicok**, for the last three years comptroller of manufacture for the Western Electric Co., New York, has been appointed to the new company post of personnel relations manager for the manufacturing department. Succeeding Mr. Hicok as comptroller of manufacture is **John M. Stahr**, who has been works comptroller of the company's Hawthorne, Chicago, plant since 1936.

Mr. Hicok joined Western Electric in 1901, at the company's Hawthorne Works, and 10 years later he was made chief of the payroll and shop cost division there. Following a period of service in other supervisory posts, in 1929 Mr. Hicok was called to the company's newly opened works at Point Breeze, Baltimore, to become superintendent of the telephone apparatus shops and chief of industrial relations. In 1938 he came to the company's New York headquarters as comptroller of manufacture. **John M. Stahr**, Mr. Hicok's successor, joined the accounting department of the company's New York shop in 1906.

• **Robert V. Finch** has been named representative in Northeastern Ohio and Northwestern Pennsylvania of the Cowles Detergent Co., Cleveland. He will handle Cowles' complete line of alkaline metal cleaners and wire drawing lubricants.

• **R. H. Sonneborn**, formerly with the Republic Steel Corp., has been appointed general sales manager of the Grabler Mfg. Co., Cleveland, according to an announcement by



JOHN A. BIGELOW, whose appointment as plant protection engineer of the Wickwire Spencer Steel Co., New York, was announced in these columns last week.

E. H. Blywise, president of the company.

• **W. F. Newbery** has been promoted to central region manager of the Detroit Rex Products Co., Detroit, manufacturers of metal cleaning equipment and materials.

• **W. Stapley Wonham**, vice-president of Wonham & Co. and partner of Carter & Co., members of the New York Stock Exchange, has retired from the securities business and will henceforth give his entire time to Wonham, Inc., New York. Wonham, Inc., merchant export and sales engineering concern, is identified with railway equipment, mining and industrial fields and is sole representative of some of the largest manufacturers in the United States.

• **L. C. McAnly** has been named vice-president in charge of manufacturing of Fruehauf Trailer Co., Detroit. It was also announced that **John C. Votypka** has been named vice-president and director of production engineering. **E. J. Gove**, vice-president and treasurer and **F. M. Reid** appointed vice-president and director of experimental and research engineering.

• **James E. Wilson** has taken over duties as Michigan manager of the priorities division of the War Production Board with office in the Boulevard Building, Detroit. Mr. Wilson has been active in industry for 15 years during which he was associated with the old Oakland division of General Motors, Airtemp division of Chrysler Corp. and the Chile Exploration Corp. in South America. He takes the place of **Edmund H. Eitel** who has returned to the Chicago District priorities office as assistant manager.

• **Walter Geist**, vice-president of the Allis-Chalmers Mfg. Co., Milwaukee, is to head a new department, established to coordinate the company's sales policies.

• **W. F. Schulten** has been elected assistant to the president, Pittsburgh Coal Co., Pittsburgh, with authority to coordinate company relations with the war efforts of the nation. Government regulations and new problems arising from the war will clear through Mr. Schulten. He will retain as well his present post of general traffic manager.

• **William L. McMorris, Jr.**, has been made mechanical engineer of the H. C. Frick Coke Co., Pittsburgh. For the past five years he has been with Jones & Laughlin Steel Corp., Pittsburgh, three years of which was spent as assistant master mechanic at the company's Eliza works. Mr. McMorris is a graduate of Lehigh University and previous to his association with Jones & Laughlin had been with Pickands, Mather & Co. and the Cleveland Cliffs Iron Co.

• **Albert A. Haniford** has been added to the sales department of Manning, Maxwell & Moore, Inc., Bridgeport, to extend the company's program of sales training. Previously, as assistant to the director of dealer relations, John-Manville, Mr. Haniford was instrumental in the development of the National Housing Guild, a national program to co-ordinate and merchandise the products and services of the building industry. He also was sales manager of the Pyroneel Co., Inc., New York.

• **R. W. Crane**, for the past 17 years district sales manager at Detroit for Crucible Steel Co. of

America, has resigned. Before going to Detroit in 1925, Mr. Crane represented the company for 14 years in the New England area.

• **G. Allan Dash, Jr.**, Philadelphia, has been selected by General Motors Corp. and the UAW-CIO to succeed **Dr. George W. Taylor** as impartial umpire under the national labor agreement between the corporation and the union. Dr. Taylor has been appointed by President Roosevelt to serve as a public member of the newly-created national war labor board. Mr. Dash has been a colleague of Dr. Taylor for 10 years and has been associated with the industrial research department of the University of Pennsylvania since 1933.

• **J. E. Heuser** of Ampco Metal, Inc., Milwaukee, has been transferred to the company's Cincinnati office at 30 West Pearl Street to assist **J. E. Cook** of that division.

• **R. S. Hudgins** has been appointed by McKenna Metals Co., Latrobe, Pa., one of the new Kennametal representatives, with headquarters at 965 Farmington Avenue, West Hartford, Conn. **Charles E. Washburn**, another new appointee, will be located at 258 Park Square Building, Boston, Mass.

• **W. E. Fruhan** has been appointed assistant manager of pipe sales division in charge of merchant pipe for Republic Steel Corp., Cleveland, succeeding **R. H. Sonneborn**. Mr. Fruhan has been with Republic Steel and its predecessor company since 1919, having been employed by Republic Iron & Steel Co. in its New York office upon his graduation from school. In 1931 he was transferred to the corporation's general sales office as chief clerk of the pipe division, and remained in that position until his promotion.

• **Edward T. Fowler**, president of the Foster Machine Co., Westfield, Mass., since 1939 and associated with the company for 32 years, has resigned. He is succeeded by **Henry S. Washburn**, Plainville, Conn., president of the H. B. Smith Co., Inc. Mr. Washburn is also president of the Plainville Casting Co., Plainville, Conn.

OBITUARY . . .

• **Edward B. Bell, Jr.**, 40, vice-president, Cleveland Tractor Co., died unexpectedly Jan. 15 in Fort Lauderdale, Fla., where he was vacationing.

• **Alton E. Lewis**, 80 years old, treasurer of the Michigan Ladder Co., died Jan. 16, at his home in Ypsilanti, Mich., where he had resided for 38 years.

• **Arthur T. Cobb**, treasurer and general manager of the Exeter Brass Works, Exeter, N. H., died at his home there Jan. 23. Born in Milan, N. H., 51 years ago, he was graduated at Dartmouth College in 1912.

• **Ezra Frick**, president of the Frick Co., Waynesboro, Pa., died Feb. 2 after a long illness. He was 86 years old. The company was founded in 1861 by **George M. Frick**, father of the late president. Mr. Frick had been general manager of the company before assuming the presidency in 1924.

• **A. N. Lindberg**, president of the Lindberg Engineering Co., and the Lindberg Steel Treating Co., Chicago, died Feb. 2. Mr. Lindberg was born at Närke, Sweden, in 1875 and came to the United States at the time of the Columbian Exposition in 1893. As a young man he had worked in the steel mills



THE LATE A. N. Lindberg, president of the Lindberg Engineering Co. and the Lindberg Steel Treating Co.

in Sweden, and his first work in this country was as a blacksmith. He was employed at the Crane Co., Chicago; Fairbanks Morse Co., Beloit, Wis.; the National Sewing Machine Co., Belvidere, Ill. In 1908 for a short time he operated a blacksmith shop at New Freedom, Wis. Later he was associated with Krasberg & Sons of Chicago. In 1921 Mr. Lindberg established the Lindberg Steel Treating Co., and in 1935, with **F. A. Hansen** and **C. H. Stevenson**, formed the Lindberg Engineering Co.

• **Edmund S. Gardner**, president of the Hartford Electric Steel Co., Hartford, and of the Roxbury Steel Casting Co., Boston, was found dead in the Copley Plaza Hotel, Boston, Feb. 5, aged 45 years. He was particularly active in Connecticut industrial circles, where he resided.

• **Louis F. Fedders**, president and treasurer of the Fedders Mfg. Co., Inc., Buffalo, for 22 years, died Feb. 4 after a year's illness. He was 50 years old.

• **D. William Tietjen**, vice-president of the E. R. Wagner Mfg. Co., Milwaukee, died Feb. 1 after a short illness. He was 69 years of age and up to 10 months ago was general plant superintendent of the Wagner firm. Mr. Tietjen was one of the early Milwaukee industrialists interested in the manufacture of bicycle parts and was connected with the old Hoyt Mfg. Co. and the C. J. Smith & Sons Co., forerunner of the A. O. Smith Corp., before joining the Wagner company.

• **Thomas John Connor**, vice-president in charge of production and a member of the board of directors of Caterpillar Tractor Co., Peoria, Ill., died suddenly of a heart attack at his home Jan. 23, aged 48 years. When the Caterpillar Tractor Co. was formed in 1925, Mr. Connor was placed in charge of the design and production of tools. He was named general factory manager of Caterpillar Tractor Co. in 1930 and was advanced to the position of vice-president in charge of manufacturing and appointed a director of the company in 1934. At the time of his death, Mr. Connor was vice-president in charge of production, administrative head of engineering, purchasing, industrial relations and training and public relations departments and a director.

MACHINE TOOLS

... SALES, INQUIRIES AND MARKET NEWS

Auto Plant Survey Seen Bringing Out Idle Tools

Cleveland

••• Machine tool circles in this district are optimistic over the possibility of some unused milling machines, horizontal and vertical boring mills, screw machines, planers and presses being turned up in the survey that is now being made of the idle equipment in automobile plants. Moreover, some observers take this move as a forerunner of a similar survey extended nationwide to all industrial plants for the purpose of permitting Federal seizure of idle machines vitally needed in war plants. Some justification for this observation may be found in the fact that this was done during the last war.

There has been some discussion in recent weeks as to whether or

not too elaborate machine shops and tool rooms are being set up in new war plants. Some executives in the industry, conversant with recent orders for precision tools to be installed in tool rooms, are of the opinion that much of this equipment will be very seldom used in operation of the new plant.

Rather than install large tool rooms in such plants, it is suggested that tooling facilities of neighboring plants be relied upon for the few occasions when certain precision tools would be required in maintenance work. Certainly, if some reduction in the size and elaborateness of tool rooms in new war plants could be effected, the equipment so conserved could be much better used in the production lines of other war plants.

The institution of priorities upon used machinery is expected to bring on to the market some

second-hand equipment that may have been held for higher prices prior to the limitation in the number of buyers of such machines. If high rated consumers will have first preference for such used machines, potential purchases by non-defense plants will be practically eliminated.

Although the bottleneck in planers continues a problem, with most companies promising deliveries within some six months or more, it is reported that Liberty planers, produced by General Motors, can be obtained in some types in four to six weeks.

"Critical" Tools Listed

Washington

••• The "critical list" of machine tools covered by the survey undertaken by the Automotive Branch of the WPB include the following: Horizontal boring machines, jig boring machines, vertical boring machines, chambering machines, hobbing machines, deep hole drilling machines, radial drilling machines, turret lathes, gear grinding machines, internal grinding machines, tool room lathes, thread milling machines, engine lathes 24-in. and up, milling machines, planers—36-in. and up, multiple spindle automatic, profiling machines, rifling machines, bar machines, rifle reaming machines and thread grinding machines.

Sub-Contracting Gains

Cincinnati

••• Effort of district machine tool builders to comply with Washington's desire for more production is constantly being put forth. Several new building projects are just passing the blue-print stage and, weekly, additional sub-contracts are being signed so that the current year will be even greater than the phenomenal 1942. Practically all of the local factories are operating on a 24-hour a day basis, although the night shifts are not all being totally manned.

S. A. E.

HY-TEN

ALLOY STEELS

OF AIRCRAFT QUALITY

Call on us for aircraft quality electric furnace steels S.A.E. 2330, 4140 and x-4340. Subject to Magnaflux test, they conform to Army and Navy specifications. Hot rolled and cold drawn stock and forgings of all types can be shipped promptly.

Complete
Stocks at

BUFFALO
NEWARK
DETROIT
CHICAGO
CLEVELAND
CAMBRIDGE
CINCINNATI

Wheelock, Lovejoy & Co., Inc.

Main Offices: 126 Sidney St., Cambridge, Mass.

NON-FERROUS METALS

... MARKET ACTIVITIES AND PRICE TRENDS

Tin Salvaging Tests

Begin in New Jersey

••• A test for salvaging old tin cans for both their tin and steel content is being arranged. A collection of tin cans is reported being made in the vicinity of Vulcan Detinning Co.'s plant at Sewaren, N. J., and adjacent towns, for tin salvaging. The plan, it is said, contemplates that the housewife will prepare the scrap by cutting off both ends of the can, flattening the body, and cleaning it. For scrap so prepared, the company is reported willing to pay \$10 a ton, delivered Sewaren, where there is reported to be available detinning capacity of about 1000 tons per month.

Rules and regulations covering the premium prices to be paid producers for over-the-quota production of lead, copper, and zinc were announced this week by WPB and OPA. Premium prices of 17c. a lb., for copper; 9.25c. a lb. for lead, and 11c. a lb. for zinc will be paid by MRC for a period of 2½ years beginning Feb. 1, 1942, but may be terminated on equitable terms by MRC should the present emergency end.

Premiums will apply to all over-quotas after Feb. 1, regardless of when tonnage quotas are announced and actual shipments begun, and quotas will be established by mines or groups of mines rather than companies in order to avoid possibility that expenditures for expansion of one property might be deterred by uncertainties as to future production from a mine or group of mines of the same company.

A supplementing amendment to the copper price schedule No. 20 adding maximum prices for 24 grades of copper alloy scrap was announced by OPA. Details of this amendment are shown in THE IRON AGE Price Section of this issue.

Maximum prices for mercury, lower than the current \$198 a flask Pacific Coast and \$202.50 a flask New York prices, were announced by OPA. Effective Feb. 4, the base price for prime virgin mercury produced in California, Oregon,

Washington, Idaho, Utah, Nevada, and Arizona is fixed at \$191 per 76 lb. flask, f.o.b. shipping point, and for Texas and Arkansas metal the f.o.b. shipping point price is fixed at \$193.

To increase its electrolytic zinc production by some 45,000 tons annually, or about 24 per cent, Anaconda Copper Mining Co. has begun plant additions costing about \$2,000,000, which are privately financed. The additional capacity will be in operation by early fall, requiring additional zinc concentrate supplies of close to 100,000 tons, expected to come from MRC foreign supplies and increased domestic production. This will increase Anaconda zinc production to nearly 235,000 tons a year.

The domestic lead pool for February was established at 15 per cent of December production, and allocations will total about 27,500.

The Price Section (Section 2) in today's issue of THE IRON AGE describes most of the major price orders and amendments covering principal non-ferrous metals, as well as the requirements placed upon producers, consumers, smelters, and refiners of these metals.

Non-Ferrous Prices

(Cents per lb. for early delivery)

Copper, Electrolytic ¹	12.00
Copper, Lake	12.00
Tin, Straits, New York	52.00
Zinc, East St. Louis ²	8.25
Lead, St. Louis ³	6.35

¹ Mine producers' quotations only, delivered Conn. Valley. Deduct ¼c. for approximate New York delivery price. ² Add 0.39c. for New York delivery. ³ Add 0.15c. for New York delivery.

Miscellaneous Non-Ferrous Prices

ALUMINUM, delivered: virgin, 99 per cent plus, 15c.-16c. a lb.; No. 12 remelt No. 2, standard, 14.50c. a lb. NICKEL electrolytic, 35c.-36c. a lb. base refinery, lots of 2 tons or more. ANTIMONY, prompt; Asiatic, 16.50c. a lb., New York; American, 14c. a lb., f.o.b. smelter. QUICK-SILVER, \$191 and \$193 per 76 lb. flask, f.o.b. shipping point. BRASS INGOTS, commercial 85-5-5-5, 13.25c. a lb.



You Can Depend On "Hercules" (Red Strand) Wire Rope

Highlights of Quality

1. Acid Open-Hearth Steel Wire
2. Rigid Tests and Inspections
3. Correct Manufacturing Methods

4. Furnished in both the Round and Flattened Strand constructions, in either Standard or Preformed Type.

•• Results are what count, and the performance record of this wire rope continues to make and hold friends.

There is no guess work when you use "HERCULES" (Red-Strand) Wire Rope. It is designed and built to do specific jobs better . . . safer . . . more economically. If you will tell us how you use wire rope, we shall be glad to suggest the construction and type most suitable for your conditions.

A. LESCHEN & SONS ROPE CO.

WIRE ROPE MAKERS
5908 KENNERLY AVENUE

NEW YORK • • • 90 West Street
CHICAGO • • • 810 W. Washington Blvd.
DENVER • • • 1554 Wazoo Street



SAFETY • • • 320 Fourth Street
PORTLAND • • • 914 N. W. 14th Avenue
SEATTLE • • • 3410 First Avenue South

More Changes in Scrap Price Order Made This Week

Washington

• • • The maximum shipping price for No. 1 heavy melting steel within the Boston switching district, a change in the definition of unprepared scrap, transportation charges by motor vehicles, other than public carriers, the shipping of unprepared "remote" scrap and maximum prices of bundles of tin coated materials were modified by amendment No. 14 to Price Schedule No. 4, iron and steel scrap, issued on Tuesday this week by OPA.

No. 1 heavy melting steel maximum shipping point price within the Boston switching district was established at \$15.05, per gross ton, f.o.b. cars or f.a.s. vessel or loaded on motor vehicles.

Unprepared is now defined to exclude objects requiring dismantling, such as bridges, box cars and junked automobiles. This portion of the amendment is designed to clarify the situation where mill men thought they were permitted to purchase junked autos, "as is, where is" at the differential of \$2.50 per gross ton under prepared grades that apply to consumer purchases of unprepared scrap.

This would result in exceeding price ceilings by \$5 to \$10 as the prepared scrap would likely cost the consumer \$25 to \$30 per gross ton.

Transportation charges by other than a public carrier may be added to the shipping point price, to the computed terms of the railroad carload rate formally introduced in the Feb. 2 amendment but need not fall below \$1 per gross ton. Previous minimum was \$1.50.

"Remote" unprepared scrap originating in Florida and certain places west of the Mississippi River must be shipped in carload lots to take advantage of the provision allowing consumers to purchase such scrap and designated a dealer to prepare at a maximum preparation fee of \$2.50 per ton.

The maximum price of bundles containing tin-coated material is

now dependent upon the percentage of such material contained in the bundle. The price of bundles containing more than 50 per cent in coated material is fixed at \$8 per gross ton below the basic open hearth grades; those not exceeding 50 per cent are priced at \$5 per gross ton under the basic open hearth grades.

Highlights of Amendment No. 13, Last Week, Include:

Much attention was given to cast grades in last week's action. Stove plate is now \$1 under No. 1 machinery cast; heavy breakable is \$2.50 under it; unstripped motor blocks have been inserted at 50c. under clean auto cast; miscellaneous malleable has been inserted and agricultural cast is included among the definitions. Also in the cast schedule the states entitled "Group C" include the Kansas City switching district. The price changes in cast will be found in Section 2, a special section devoted to prices, which comes with this issue.

Chemical borings containing no more than 0.5 per cent oil content for chemical use in the making of explosives have a maximum price \$5 over ordinary cast iron borings. Where used for chemical use other than in explosive making, they are \$3 over ordinary borings. The dollar springboard provision does not apply.

Railroad scrap shipped from dealer's yard is now deemed to have lost its railroad origin. Such scrap, scrap originating from mines, logging roads and similar sources, and scrap originating from railroads which have not (within two weeks after Feb. 2) filed price information with OPA, has the following prices:

1. In the case of long and short scrap rails and rerolling rails the shipping point price is computed by applying the most favorable basing point formula to the most favorable basing point in appendix B. Maximum delivered price is shipping point price plus all necessary transportation charges to point of delivery.
2. All other grades come under Appendix A or C and are priced according to the provisions of the applicable appendix. Thus, no dealer may claim a premium over the Appendix A price for No. 1 heavy melting.

The 80-cent deduction in computing shipping point price within

Prices in Section Two

• • • The tables of iron and steel scrap prices usually found following these pages appear this week in Section 2 with much other usable price data on metals.

the Cincinnati area is now limited to the basic open-hearth grades.

Open hearth consumers of alloy-free low phos and sulphur turnings are allowed to obtain OPA permission to purchase this grade.

Mixed shipments of basic open-hearth, blast furnace or cast iron grades are deemed shipments of unprepared scrap and shall be priced \$2.50 under open-hearth.

The new specification for electric furnace bundles is 14 x 14 x 20-in. or smaller, and may now be sold from a dealer's yard at a \$1 premium over basic open-hearth grades.

Where shipping point or maximum delivered price computation involves water movement, established dock charges may no longer be used in the computation. Instead, 50c. per gross ton at Memphis, \$1 per gross ton at Great Lakes ports, \$1.25 per gross ton at New England ports, and 75c. per gross ton at all other ports must be used in the computation.

The truck charge allowance on maximum delivered prices has been changed both in regard to steel and cast scrap. A distinction is drawn between shipment via public carrier and shipment by motor carrier owned or controlled by the dealer.

New England shipping point prices are in the future to be computed from the most favorable basing point. The maximum freight limitations out of New England are \$6.27 per gross ton from any shipping point, irrespective of the dollar springboard.

North Dakota and South Dakota have been added as remote states. A provision has been made for consumers' purchases of unprepared scrap out of remote states where adequate facilities for preparation do not exist at or near the shipping point. In such cases, the

consumer takes title to the scrap at the remote shipping point at \$2.50 or more under the corresponding grade or grades of prepared scrap and may designate a dealer to prepare this scrap for it at a maximum preparation fee of \$2.50 per gross ton.

Scrap Buyers Urged to "Inform" on Auto Graveyards

Washington

••• Steel companies and scrap dealers were urged by Lessing J. Rosenwald, chief of the WPB Bureau of Industrial Conservation and Leon Henderson, OPA Administrator, last Friday to inform on owners of auto graveyards who refuse "fair offers" for their stock. Within the next 90 days, scrap consumers are asked to fill out forms showing the name of the recalcitrant junked car dealer, the description of the cars, including tonnages, subject to the offer, the price offered and the price asked, and the result of the negotiations.

WPB will review the forms and investigate, and if convinced that the refusal to sell was unwarranted, will requisition the entire graveyard, including parts. The cars thus seized will be auctioned off to the highest bidder who will have to agree to break them up.

Prices of junked autos will be governed by Price Schedule No. 4 which requires that the cars be so priced that the resultant prepared scrap will not exceed ceiling prices delivered to the mills.

The burden of breaking up this type of scrap will in 98 per cent of the cases fall on the scrap iron industry, it was pointed out, since mill preparation facilities are limited. Mr. Henderson and Mr. Rosenwald said that "We cannot afford to permit 2 per cent of the scrap to dictate the price of the other 98 per cent."

PITTSBURGH—Scrap is no more plentiful here than a week ago and some open hearths continued down because of lack of material. Spurts of warm weather have caused the flow to be a little bit better but the resultant tonnage has not changed the overall situation. Speaking here this week, William L. Batt, director of materials, War Production Board, pleaded for all out cooperation in reclaiming scrap from every source possible and predicted that it might be impossible to operate steel mills at capacity in 1942 because of scrap or pig iron shortage. On the basis of last year's production of

scrap, he said the steel industry would be short six and a half million tons of scrap or pig iron if the 1941 figures are not bettered.

SEATTLE—Dealers report scrap steel coming in regularly at about 60 to 65 per cent of the normal rate. The government has accepted the city's offer of 16,000 tons of abandoned street car rails, and the WPA has been directed to dig them out and replace the pavement without cost to the city.

BIRMINGHAM—This scrap-conscious city which has obtained 250 tons of material in a civic collection drive now proposes to follow the lead of several other municipalities and make available for steel mill and foundry use the more than 4000 tons of street car rails that were covered over with asphalt when buses replaced street cars on some of the city's streets. Authorities here have asked WPA to approve the rail removal.

ST. LOUIS—Receipts in this market continue to increase, most of it from nearby points, resulting in one of the district steel mills adding another furnace. The St. Louis *Star-Times* charged in a news story with photographs, that scrap is piling up here, but dealers insist charge of hoarding is unfair.

BUFFALO—A local dealer this week ran newspaper advertisements daily offering \$13 a net ton for tin scrap, \$14 for

auto bodies and fenders, and \$14.95 for mixed scrap iron—prices other dealers claim are "away out of line." Steel mills in this area, however, have banned tin in any form. The Angert Auto Parts Co. of Buffalo this week contracted to sell 1500 tons of auto scrap to a local dealer who will send it on to Bethlehem's Lackawanna plant.

BOSTON—New price and trucking regulations have again upset the trade, while weather conditions have slowed scrap movement. At \$19 a ton f.o.b., stove plate is considered excessive, whereas previously it was too low. Uncleaned motor blocks at \$19.50 leaves only 50c. a ton for cleaning. Ruling on borings for chemical purposes places shippers to gas cleaners at a disadvantage. The \$2.50 differential on breakable cast, as against \$1.50 heretofore, still makes preparation for open hearth consumption unattractive.

CLEVELAND—Although the scrap movement appears to have improved in recent weeks, foundries and dealers are unhappy at the action of steel companies in taking it upon themselves to scrap jalopies in the yards of second hand car owners. The foundries protest this action on the score that the cast scrap in these old cars has been moving to open hearths while the dealers are unhappy over this action, since they are circumvented by the steel mills.

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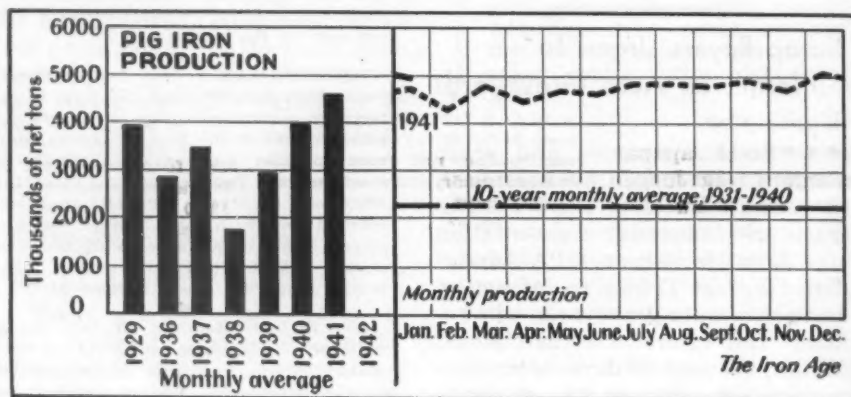
January Iron Output Totals 4,970,531 Tons

••• Coke pig iron production for January dropped to 4,970,531 net tons from the record output of 5,012,276 tons in December. On a daily basis, output in January fell from 161,686 tons a day in December to 160,340 tons in January. The operating rate for the industry was 99.3 per cent of capacity in January, compared with 101.2 per cent in December.

There were 217 furnaces in blast on Feb. 1, producing at the rate of 159,270 tons a day, compared with 216 in blast on Jan. 1, with a production rate of 162,140 tons. The

United States Steel Corp. blew in one furnace and took off one. Inde-

pendent producers put three in blast and blew out two.



Production of Coke Pig Iron and Ferromanganese

	Pig Iron*		Ferro-Mn†	
	1942	1941	1942	1941
January	4,970,531	4,663,695	36,455	35,337
February	4,197,872	33,627	33,627	33,627
March	4,704,135	37,808	37,808	37,808
April	4,334,267	44,341	44,341	44,341
May	4,599,966	47,256	47,256	47,256
June	4,553,165	42,582	42,582	42,582
½ year	27,053,100	240,951	240,951	240,951
July	4,770,778	47,193	47,193	47,193
August	4,791,432	52,735	52,735	52,735
September	4,716,901	46,932	46,932	46,932
October	4,856,306	55,495	55,495	55,495
November	4,702,927	47,669	47,669	47,669
December	5,012,276	48,188	48,188	48,188
Year	55,903,720	539,163	539,163	539,163

*These totals do not include charcoal pig iron. †Included in pig iron figures.

Daily Average Production of Coke Pig Iron

	Per Cent		Per Cent	
	1942	Capacity	1941	Capacity
January	160,340	...	150,441	95.5
February	149,924	95.2
March	151,745	96.9
April	144,475	91.8
May	148,386	93.8
June	151,772	95.9
½ year	149,465	94.5
July	153,896	97.1
August	154,562	97.5
September	157,230	98.8
October	156,655	98.2
November	156,764	97.7
December	161,686	101.2
Year	153,161	96.6

Merchant Iron Made, Daily Rate

	1942	1941	1940
January	20,085	20,812	16,475
February	...	21,254	14,773
March	...	23,069	11,760
April	...	20,434	13,656
May	...	21,235	16,521
June	...	21,933	13,662
July	...	21,957	16,619
August	...	22,578	17,395
September	...	21,803	17,571
October	...	23,243	18,694
November	...	22,690	22,792
December	...	23,567	19,779

Production by Districts and Coke Furnaces in Blast (In Net Tons)

	January, 1942		December, 1941			February, 1942		January, 1942	
		Daily % of Capacity		Daily % of Capacity	January, 1941	No. in Blast	Operating Rate	No. in Blast	Operating Rate
Eastern	34,298	98.1	39,498	113.0	38,014	2	1,105	2	1,275
Buffalo	299,340	88.1	321,733	94.8	284,661	14	9,255	14	10,380
Philadelphia	476,181	101.3	482,643	102.9	394,080	19	15,360	19	15,600
Ferro. and Spiegel ..	19,196	109.2	18,162	103.2	18,741	4	620	4	585
Pittsburgh	1,167,992	97.7	1,146,028	95.9	1,128,690	49	37,910	46	36,420
Ferro. and Spiegel ..	27,476	63.3	40,726	93.9	26,161	3	885	4	1,315
South Ohio River	100,159	92.1	103,107	94.8	102,345	7	3,230	7	3,325
Valleys	598,620	102.2	615,672	105.2	589,143	25	19,500	24	19,620
Wheeling	242,127	102.2	225,531	95.2	220,622	10	7,810	10	7,920
Cleveland	400,260	98.1	409,625	100.4	394,821	15	12,070	16	13,215
Chicago	1,048,956	98.8	1,060,970	99.9	953,101	40	33,835	40	34,225
St. Louis	23,719	109.4	23,298	107.1	.....	1	765	1	750
Detroit	139,539	120.2	126,312	108.8	119,801	5	4,560	5	4,360
Western	51,700	82.2	68,343	108.7	72,035	3	1,425	4	2,205
Southern	338,980	108.1	328,775	104.9	319,111	18	10,935	19	10,915
Ferromanganese	1,988	31.5	853	10.6	2,369	2	65	1	30
Total	4,970,531	99.3	5,012,276	101.2	4,663,695	217	159,270	216	162,140

Cast Iron Pipe

• **City Water Works Department, Fall River, Mass.,** will close bids on or about Feb. 17 for new 42-in. pipe line from Lake Noquoche to Watuppa Pond for main water supply system (Contract 2); also for pumping station with pumping machinery, diesel engine unit and auxiliary equipment (Contract 1). Hayden, Harding & Buchanan, Park Square Building, Boston, are consulting engineers.

Water Department, Shreveport, La., plans pipe line extensions in water system and other waterworks installation. Cost about \$150,000. Fund in that amount has been arranged through Federal grant.

DePere, Wis., asks bids until Feb. 16 for 1200 ft. of pipe for main supply line under Fox River, installation to be carried out by municipality at later date. Frank M. Charlesworth, Kaukauna, Wis., is consulting engineer.

Fairfield, Ohio, plans pipe line extensions in water system and other waterworks installation, including 200,000-gal. elevated steel tank and tower, pumping machinery and accessories. Rial T. Parrish, U. B. Building, Dayton, Ohio, is consulting engineer.

Regional Director, Defense Public Works Division, Federal Works Administration, 20 North Wacker Drive, Chicago, will take bids soon for water system for federal project at Kingsbury, Ind., including 1951 ft. of 8-in. pipe, 3126 ft. of 4-in., and about 3850 ft. of 6-in.; also, deep-well turbine pumping unit and auxiliary equipment with capacity of 200 gal. per min., gasoline power lift and other waterworks equipment. Phelps & Peck, Brinckman Building, Michigan City, Ind., are consulting engineers.

Mountain View Water District, Martinez, Cal., plans pipe line extensions in water system, including new main line for connection with Central Valley project of government. Special election has been called Feb. 24 to vote bonds for \$59,000.

Bremerton, Wash., Board of Water Commissioners have awarded 370 tons of 2 to 8-in. pipe as follows: 185 tons to Hugh Purcell Co., Seattle, for United States Pipe & Foundry Co. and 185 tons for Pacific States Cast Iron Pipe Co., Provo, Utah.

Seattle, Wash., has opened bids on 200 tons. **Roswell, N. M.,** will require 74,000 ft. of cement lined cast iron or cement-asbestos pipe for Roswell air field. Bids will be opened about February 24 by United States Engineer, Albuquerque.

Pipe Lines

• **Shell Oil Co., Shell Building, Houston, Tex.,** has authorized new 8-in. welded steel pipe line from oil field in vicinity of Healdton and Ryan, Okla., to point near Petrolia, Tex., over 50 miles, for crude oil transmission. Connection will be made with existing pipe line system at latter point.

Post Utilities Officer, Fort Custer, Mich., asks bids until Feb. 18 for 4500 ft. of 3 to 1/2-in. steel pipe; also for reducing valves, tees, reducers, unions, bushings, etc. (Circular RU-2).

Border Pipe Line Co., San Salvador, Tex., operating in local natural gas field area, plans extensions in welded steel pipe lines to point on international border in Webb County, Tex., about 40 miles from Laredo, Tex., for gas transmission for service at zinc smelting plant of American Smelting & Refining Co., Rosita, Coahuila, Mexico. Latter company will transmit gas from delivery point noted to smelter. New line will have a capacity of about 10,000,000 cu. ft. of natural gas daily, with booster stations and other operating facilities.

United States Engineer Office, Court House and Custom House, St. Louis, asks bids (no closing date stated) for pressure pipe line system for gasoline transmission for fueling service at Vichy, Mo., airfield, including valves, fittings, etc. Installation will include two 25,000-gal. gasoline storage tanks.

Trans-American Pipeline Corp., 1701 H Street, N. W., Washington, plans new welded steel pipe line from oil field district in Wichita County, Tex., to Savannah, Ga., for crude oil

Weekly Bookings of Construction Steel in Tons

Week Ended—→	Feb. 10, 1942	Feb. 3, 1942	Jan. 13, 1942	Feb. 11, 1941	Year to Date	
	1942	1942	1942	1941	1942	1941
Fabricated structural steel awards	25,000	22,600	48,000	25,500	169,650	229,550
Fabricated plate awards.....	1,810	300	0	2,350	5,500	22,195
Sheet steel piling awards.....	0	690	0	0	790	4,250
Reinforcing bar awards.....	9,450	24,925	55,000	13,570	220,975	64,590
Total letting of Construction Steel	36,260	48,515	103,000	41,420	396,915	320,585

transmission. A deep-water bulk terminal will be built at last noted point for loading tankers. Cost about \$25,000,000 with booster pumping stations and other operating facilities. Application has been made for permission and hearing is scheduled on Feb. 10 by Federal Investigation and Research Board of Transportation, Washington. Vincent G. Shinkle is consulting engineer for company.

Federal Works Agency, Washington, has awarded contract to Pipe & Engineering Co., Inc., 537 Coster Street, New York, for installation of pressure pipe line system for gas distribution at Bridgeport, Conn., at \$34,932.

headquarters at 410 Asylum Street, Hartford, and a St. Louis and Southwestern division at St. Louis, with S. C. Shank as manager.

• **Hallidie Machinery Co., Inc., Seattle,** a machine tool firm, is being operated by W. S. Dyson as a sole tradership under the name of Hallidie Machinery Co. The company's policy remains unchanged, and all contracts in force Dec. 31, 1941, have been acquired by Mr. Dyson.

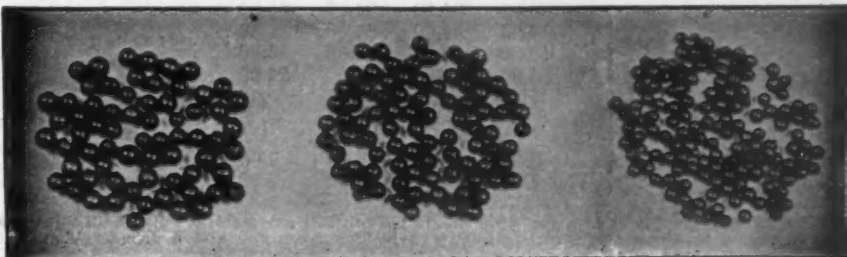
• **Baker Brothers, Inc., Toledo,** manufacturer of drilling and boring machines, keyseaters and contour grinders, has appointed the Vandeyck Churchill Co., 114 Liberty Street, New York, its exclusive sales agent in eastern New York State and the New York City metropolitan area, including northern New Jersey and Fairfield County, Conn.

Trade Notes

Wisconsin Bridge & Iron Co.'s Detroit office has been moved to Suite 333, Curtis Building, 2842 West Grand Boulevard.

• **Oakite Products, Inc., New York,** maker of cleaning materials, has added a New England service division, headed by T. R. Smith with

• **The Aber Engineering Works, Inc.,** has removed its office and factory from Racine, Wis., to Waterford, Wis.



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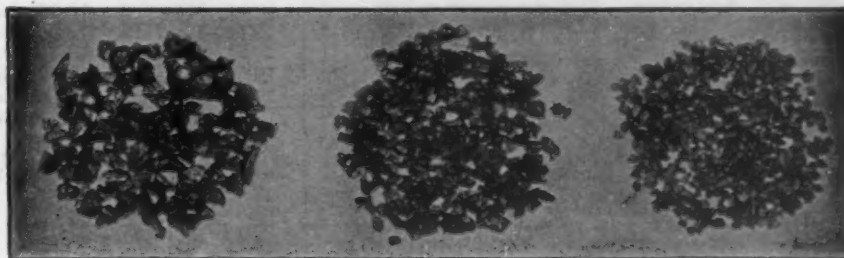
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HEAT-TREATED STEEL GRIT



... Comparison of Prices

(Advances Over Past Week in **Heavy Type**; Declines in *Italics*)

(Prices Are F.O.B. Major Basing Points)

Flat Rolled Steel: (Cents Per Lb.)	Feb. 10, 1942	Feb. 3, 1942	Jan. 13, 1942	Feb. 11, 1941
Hot rolled sheets	2.10	2.10	2.10	2.10
Cold rolled sheets	3.05	3.05	3.05	3.05
Galvanized sheets (24 ga.)	3.50	3.50	3.50	3.50
Hot rolled strip	2.10	2.10	2.10	2.10
Cold rolled strip	2.80	2.80	2.80	2.80
Plates	2.10	2.10	2.10	2.10
Stain's c.r. strip (No. 302)	28.00	28.00	28.00	28.00

Tin and Terne Plate: (Dollars Per Base Box)	Feb. 10, 1942	Feb. 3, 1942	Jan. 13, 1942	Feb. 11, 1941
Tin plate	\$5.00	\$5.00	\$5.00	\$5.00
Manufacturing ternes ...	4.30	4.30	4.30	4.30

Bars and Shapes: (Cents Per Lb.)	Feb. 10, 1942	Feb. 3, 1942	Jan. 13, 1942	Feb. 11, 1941
Merchant bars	2.15	2.15	2.15	2.15
Cold finished bars	2.65	2.65	2.65	2.65
Alloy bars	2.70	2.70	2.70	2.70
Structural shapes	2.10	2.10	2.10	2.10
Stainless bars (No. 302)	24.00	24.00	24.00	24.00

Wire and Wire Products: (Cents Per Lb.)	Feb. 10, 1942	Feb. 3, 1942	Jan. 13, 1942	Feb. 11, 1941
Plain wire	2.60	2.60	2.60	2.60
Wire nails	2.55	2.55	2.55	2.55

Rails: (Dollars Per Gross Ton)	Feb. 10, 1942	Feb. 3, 1942	Jan. 13, 1942	Feb. 11, 1941
Heavy rails	\$40.00	\$40.00	\$40.00	\$40.00
Light rails	40.00	40.00	40.00	40.00

Semi-Finished Steel: (Dollars Per Gross Ton)	Feb. 10, 1942	Feb. 3, 1942	Jan. 13, 1942	Feb. 11, 1941
Rerolling billets	\$34.00	\$34.00	\$34.00	\$34.00
Sheet bars	34.00	34.00	34.00	34.00
Slabs	34.00	34.00	34.00	34.00
Forging billets	40.00	40.00	40.00	40.00
Alloy blooms, billets, slabs	54.00	54.00	54.00	54.00

Wire Rods and Skelp: (Cents Per Lb.)	Feb. 10, 1942	Feb. 3, 1942	Jan. 13, 1942	Feb. 11, 1941
Wire rods	2.00	2.00	2.00	2.00
Skelp (grvd)	1.90	1.90	1.90	1.90

Pig Iron: (Per Gross Ton)	Feb. 10, 1942	Feb. 3, 1942	Jan. 13, 1942	Feb. 11, 1941
No. 2 fdy., Philadelphia...	\$25.84	\$25.84	\$25.84	\$25.84
No. 2, Valley furnace...	24.00	24.00	24.00	24.00
No. 2, Southern Cin'ti...	24.06	24.06	24.06	24.06
No. 2, Birmingham	20.38	20.38	20.38	19.38
No. 2, fondry, Chicago†...	24.00	24.00	24.00	24.00
Basic, de'l eastern Pa...	25.34	25.34	25.34	25.34
Basic, Valley furnace...	23.50	23.50	23.50	23.50
Malleable, Chicago†	24.00	24.00	24.00	24.00
Malleable, Valley	24.00	24.00	24.00	24.00
L. S. charcoal, Chicago...	31.34	31.34	31.34	30.34
Ferromanganese†	120.00	120.00	120.00	120.00

†The switching charge for delivery to foundries in the Chicago district is 60c. per ton. †For carlots at seaboard.

Scrap: (Per Gross Ton)	Feb. 10, 1942	Feb. 3, 1942	Jan. 13, 1942	Feb. 11, 1941
Heavy melt'g steel, P'gh.	\$20.00	\$20.00	\$20.00	\$20.75
Heavy melt'g steel, Phila.	18.75	18.75	18.75	20.00
Heavy melt'g steel, Ch'go	18.75	18.75	18.75	19.25
No. 1 hy. comp. sheet, Det.	17.85	17.85	17.85	17.75
Low phos. plate, Youngs'n	23.00	23.00	23.00	24.00
No. 1 cast, Pittsburgh...	22.00	22.00	22.00	22.25
No. 1 cast, Philadelphia...	24.00	24.00	24.00	23.75
No. 1 cast, Ch'go*	21.00	21.00	21.00	19.25

*Changed to gross ton basis, April 3, 1941.

Coke, Connellsville: (Per Net Ton at Oven)	Feb. 10, 1942	Feb. 3, 1942	Jan. 13, 1942	Feb. 11, 1941
Furnace coke, prompt ...	\$6.00	\$6.00	\$6.125	\$5.50
Foundry coke, prompt ...	6.875	6.875	6.875	5.75

Non-Ferrous Metals: (Cents per Lb. to Large Buyers)	Feb. 10, 1942	Feb. 3, 1942	Jan. 13, 1942	Feb. 11, 1941
Copper, electro., Conn.*...	12.00	12.00	12.00	12.00
Copper, Lake, New York.	12.00	12.00	12.00	12.00
Tin (Straits), New York.	52.00	52.00	52.00	50.25
Zinc, East St. Louis	8.25	8.25	8.25	7.25
Lead, St. Louis	6.35	6.35	5.70	5.50
Antimony (Asiatic), N. Y.	16.50	16.50	16.50	16.50

*Mine producers only.

The various basing points for finished and semi-finished steel are listed in the detailed price tables, pages 143-148 herein. On export business there are frequent variations from the above prices. Also in domestic business, there is at times a range of prices on various products, as shown in our detailed price tables.

... Composite Prices

FINISHED STEEL			PIG IRON			SCRAP STEEL		
Feb. 10, 1942.....	2.30467c. a Lb.....	.....\$23.61 a Gross Ton.....	.....\$19.17 a Gross Ton.....			
One week ago	2.30467c. a Lb.....	.....\$23.61 a Gross Ton.....	.....\$19.17 a Gross Ton.....			
One month ago	2.30467c. a Lb.....	.....\$23.61 a Gross Ton.....	.....\$19.17 a Gross Ton.....			
One year ago	2.30467c. a Lb.....	.....\$23.45 a Gross Ton.....	.....\$20.00 a Gross Ton.....			

High			Low			High			Low			High			Low		
1941.....	2.30467c.,		2.30467c.,			\$23.61, Mar. 20	\$23.45, Jan. 2		\$22.00, Jan. 7		\$19.17, Apr. 10						
1940.....	2.30467c.,	Jan. 2	2.24107c.,	Apr. 16		23.45, Dec. 23	22.61, Jan. 2	21.83, Dec. 30		16.04, Apr. 9							
1939.....	2.35367c.,	Jan. 3	2.26689c.,	May 16		22.61, Sept. 19	20.61, Sept. 12	22.50, Oct. 3		14.08, May 16							
1938.....	2.58414c.,	Jan. 4	2.27207c.,	Oct. 18		23.25, June 21	19.61, July 6	15.00, Nov. 22		11.00, June 7							
1937.....	2.58414c.,	Mar. 9	2.32263c.,	Jan. 4		23.25, Mar. 9	20.25, Feb. 16	21.92, Mar. 30		12.92, Nov. 10							
1936.....	2.32263c.,	Dec. 28	2.05200c.,	Mar. 10		19.74, Nov. 24	18.73, Aug. 11	17.75, Dec. 21		12.67, June 9							
1935.....	2.07642c.,	Oct. 1	2.06492c.,	Jan. 8		18.84, Nov. 5	17.83, May 14	13.42, Dec. 10		10.33, Apr. 29							
1934.....	2.15367c.,	Apr. 24	1.95757c.,	Jan. 2		17.90, May 1	16.90, Jan. 27	13.00, Mar. 13		9.50, Sept. 25							
1933.....	1.95578c.,	Oct. 3	1.75836c.,	May 2		16.90, Dec. 5	13.56, Jan. 3	12.25, Aug. 8		6.75, Jan. 3							
1932.....	1.89196c.,	July 5	1.83901c.,	Mar. 1		14.81, Jan. 5	13.56, Dec. 6	8.50, Jan. 12		6.43, July 5							
1931.....	1.99629c.,	Jan. 13	1.86586c.,	Dec. 29		15.90, Jan. 6	14.79, Dec. 15	11.33, Jan. 6		8.50, Dec. 29							
1930.....	2.25488c.,	Jan. 7	1.97319c.,	Dec. 9		18.21, Jan. 7	15.90, Dec. 16	15.00, Feb. 18		11.25, Dec. 9							
1929.....	2.31773c.,	May 28	2.26498c.,	Oct. 29		18.71, May 14	18.21, Dec. 17	17.58, Jan. 29		14.08, Dec. 3							

A weighted index based on steel bars, beams, tank plates, wire, rails, black pipe, hot and cold-rolled sheets and strip. These products represent 78 per cent of the United States output. This revised index recapitulated to 1929 in the Aug. 28, 1941, issue.

Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo, Valley and Southern iron at Cincinnati.

Based on No. 1 heavy melting steel scrap quotations to consumers at Pittsburgh, Philadelphia and Chicago.

Prices of Finished Iron and Steel...

Steel prices shown here are f.o.b. basing points, in cents per lb., unless otherwise indicated. On some products either quantity deductions or quantity extras apply. In many cases gage, width, cutting, physical, chemical extras, etc., apply to the base price. Actual realized prices to the mill, therefore, are affected by extras, deductions, and in most cases freight absorbed to meet competition.

Basing Point ↓ Product													DELIVERED TO		
	Pitts- burgh	Chicago	Gary	Cleve- land	Birm- ingham	Buffalo	Youngs- town	Spar- rows Point	Granite City	Middle- town, Ohio	Gulf Ports, Cars **	Pacific Ports, Cars **	Detroit	New York	Phila- delphia
SHEETS															
Hot rolled	2.10¢	2.10¢	2.10¢	2.10¢	2.10¢	2.10¢	2.10¢	2.10¢	2.20¢	2.10¢		2.65¢	2.20¢	2.34¢	2.27¢
Cold rolled ¹	3.05¢	3.05¢	3.05¢	3.05¢		3.05¢	3.05¢		3.15¢	3.05¢		3.70¢	3.15¢	3.39¢	3.37¢
Galvanized (24 ga.)	3.50¢	3.50¢	3.50¢		3.50¢	3.50¢	3.50¢	3.50¢	3.60¢	3.50¢		4.05¢		3.74¢	3.67¢
Enameling (20 ga.)	3.35¢	3.35¢	3.35¢	3.35¢			3.35¢		3.45¢	3.35¢		4.00¢	3.45¢	3.71¢	3.67¢
Long ternes ²	3.80¢		3.80¢									-4.55¢			
STRIP															
Hot rolled ³	2.10¢	2.10¢	2.10¢	2.10¢	2.10¢		2.10¢			2.10¢		2.75¢	2.20¢	2.46¢	
Cold rolled ⁴	2.80¢	2.90¢					2.80¢		(Worcester = 3.00¢)				2.90¢	3.16¢	
Cooperage stock	2.20¢	2.20¢			2.20¢		2.20¢							2.56¢	
Commodity C-R	2.95¢			2.95¢			2.95¢		(Worcester = 3.35¢)				3.05¢	3.31¢	
TIN PLATE															
Standard cokes, base box	\$5.00	\$5.00	\$5.00						\$5.10						\$5.32
BLACK PLATE															
29 gage ⁵	3.05¢	3.05¢	3.05¢						3.15¢			4.05¢ (¹⁰)			3.37¢
TERNES, M'FG.															
Special coated, base box	\$4.30	\$4.30	\$4.30						\$4.40						
BARS															
Carbon steel	2.15¢	2.15¢	2.15¢	2.15¢	2.15¢	2.15¢			(Duluth = 2.25¢)		2.50¢	2.80¢	2.25¢	2.49¢	2.47¢
Rail steel ⁶	2.15¢	2.15¢	2.15¢	2.15¢	2.15¢	2.15¢					2.50¢	2.80¢			
Reinforcing (billet) ⁷	2.15¢	2.15¢	2.15¢	2.15¢	2.15¢	2.15¢	2.15¢	2.15¢			2.50¢	2.55¢	2.25¢	2.39¢	
Reinforcing (rail) ⁷	2.15¢	2.15¢	2.15¢	2.15¢	2.15¢	2.15¢	2.15¢				2.50¢	2.55¢	2.25¢		2.47¢
Cold finished ⁸	2.65¢	2.65¢	2.65¢	2.65¢		2.65¢				(Detroit = 2.70¢)				3.01¢	2.97¢
Alloy, hot rolled	2.70¢	2.70¢				2.70¢			(Bethlehem, Massillon, Canton = 2.70¢)				2.80¢		
Alloy, cold drawn	3.35¢	3.35¢	3.35¢	3.35¢		3.35¢							3.45¢		
									(Coatesville and Claymont = 2.10¢)						
PLATES															
Carbon steel	2.10¢	2.10¢	2.10¢	2.10¢	2.10¢		2.10¢	2.10¢	2.25¢(¹¹)		2.45¢	2.65¢	2.25¢	2.29¢	2.15¢
Wrought iron	3.80¢														
Floor plates	3.35¢	3.35¢									3.70¢	4.00¢		3.71¢	3.67¢
Alloy	3.50¢	3.50¢				(Coatesville = 3.50¢)					3.95¢	4.15¢		3.70¢	3.37¢
SHAPES															
Structural	2.10¢	2.10¢	2.10¢		2.10¢	2.10¢			(Bethlehem = 2.10¢)		2.45¢	2.75¢		2.27¢	2.215¢
SPRING STEEL, C-R															
0.26 to 0.50 Carbon	2.80¢			2.80¢					(Worcester = 3.00¢)						
0.51 to 0.75 Carbon	4.30¢			4.30¢					(Worcester = 4.50¢)						
0.76 to 1.00 Carbon	6.15¢			6.15¢					(Worcester = 6.35¢)						
1.01 to 1.25 Carbon	8.35¢			8.35¢					(Worcester = 8.55¢)						
WIRE⁹															
Bright	2.60¢	2.60¢		2.60¢	2.60¢				(Worcester = 2.70¢)			3.10¢			2.92¢
Galvanized	2.60¢	2.60¢		2.60¢	2.60¢				(Worcester = 2.70¢)			3.10¢			2.92¢
Spring	3.20¢	3.20¢		3.20¢					(Worcester = 3.30¢)			3.80¢			3.52¢
PILING															
Steel sheet	2.40¢	2.40¢				2.40¢						2.95¢			2.72¢
IRON BARS¹²															
Wrought single refined	4.40¢														
Wrought double refined	5.40¢														

¹ Mill run sheets are 10c. per 100 lb. less than base; and primes only, 25c. above base. ² Unassorted 8-lb. coating. ³ Widths up to 12 in. ⁴ Carbon 0.25 per cent and less. ⁵ Applies to certain width and length limitations. ⁶ For merchant trade. ⁷ Straight lengths as quoted by distributors. ⁸ Also shafting. For quantities of 20,000 to 39,999 lb. ⁹ Carload lot to manufacturing trade. ¹⁰ Boxed. ¹¹ Ship plates only. ¹² Common iron bars quoted at 2.15c. by Terre Haute, Ind., producer. ** Gulf and Pacific Ports prices shown here do not apply if the customary means of transportation (rail and water) is not used.

PRICES

SEMI-FINISHED STEEL

Billets, Blooms and Slabs

Pittsburgh, Chicago, Gary, Cleveland, Youngstown, Buffalo, Birmingham, Sparrows Point (rerolling only). Prices delivered Detroit are \$2 higher; f.o.b. Duluth, billets only, \$2 higher.

Per Gross Ton
Rerolling\$34.00
Forging quality 40.00

Shell Steel

Basic open hearth shell steel, f.o.b. Pittsburgh and Chicago.

Per Gross Ton
3 in. to 12 in.....\$52.00
12 in. to 18 in..... 54.00
18 in. and over..... 56.00

Note: The above base prices apply on lots of 1000 tons of a size and section to which are to be added extras for chemical requirements, cutting to length, or quantity.

Sheet Bars

Pittsburgh, Chicago, Cleveland, Youngstown, Buffalo, Canton, Sparrows Point, Md.

Per Gross Ton
Open hearth or bessemer.....\$34.00

Skelp

Pittsburgh, Chicago, Youngstown, Coatesville, Pa., Sparrows Point, Md.

Per Lb.
Grooved, universal and sheared 1.90c.

Wire Rods

(No. 5 to 9/32 in.) Per Lb.
Pittsburgh, Chicago, Cleveland. 2.00c.
Worcester, Mass. 2.10c.
Birmingham 2.00c.
San Francisco 2.50c.
Galveston 2.25c.

9/32 in. to 47/64 in., 0.15c. a lb. higher. Quantity extras apply.

Alloy Steel Blooms, Billets and Slabs

Per Gross Ton
Pittsburgh, Chicago, Canton, Massillon, Buffalo or Bethlehem\$54.00

TOOL STEEL

(F.o.b. Pittsburgh) Base per Lb.
High speed 67c.
Straight molybdenum 54c.
Tungsten-molybdenum 57½c.
High-carbon-chromium 43c.
Oil hardening 24c.
Special carbon 22c.
Extra carbon 18c.
Regular carbon 14c.

Warehouse prices east of Mississippi are 2c. a lb. higher; west of Mississippi, 3c. higher.

WAREHOUSE PRICES

(Delivered Metropolitan areas, per 100 lb. See THE IRON AGE, Dec. 25, 1941, page 88, for details of OPA Price Schedule No. 49, covering steel resale prices. These prices do not necessarily apply for dislocated tonnage shipments when the f.o.b. city prices are used in conformance with Schedule 49.)

	Pittsburgh	Chicago	Cleveland	Philadelphia	New York	Detroit	Buffalo	Boston	Birmingham	St. Louis	St. Paul	Milwaukee	Los Angeles
Sheets, hot rolled	\$3.35	\$3.25	\$3.35	\$3.75	\$3.58	\$3.43	\$3.25	\$3.71	\$3.45	\$3.39	\$3.50	\$3.38	\$4.65
Sheets, cold rolled		4.10	4.05	4.05	4.60	4.30	4.30	4.68		4.24	4.90	4.23	6.85
Sheets, galvanized	4.65	4.85	4.62	5.00	5.00	4.84	4.75	5.11	4.75	4.99	5.00	4.98	5.85
Strip, hot rolled	3.60	3.60	3.50	3.95	3.96	3.68	3.82	4.06	3.70	3.74	3.85	3.73	5.00
Strip, cold rolled	3.20	3.50	3.20	3.31	3.51	3.40	3.52	3.46		3.61	3.83	3.54	
Plates	3.40	3.55	3.40	3.75	3.76	3.60	3.62	3.85	3.55	3.69	3.80	3.68	4.50
Structural shapes	3.40	3.55	3.58	3.75	3.75	3.65	3.40	3.85	3.55	3.69	3.80	3.68	4.50
Bars, hot rolled	3.35	3.50	3.25	3.85	3.84	3.43	3.35	3.98	3.50	3.64	3.75	3.63	4.50
Bars, cold finished	3.65	3.75	3.75	4.06	4.09	3.80	3.75	4.13	4.43	4.02	4.34	3.88	6.00
Bars, ht. rld. SAE 2300	7.45	7.35	7.55	7.31	7.60	7.67	7.35	7.75		7.72	7.45	7.58	9.55
Bars, ht. rld. SAE 3100	5.75	5.65	5.85	5.86	5.90	5.97	5.65	6.05		6.02	6.00	5.88	8.55
Bars, ed. drn. SAE 2300	8.40	8.40	8.40	8.56	8.84	8.70	8.40	8.88		8.77	8.84	8.63	10.55
Bars, ed. drn. SAE 3100	6.75	6.75	7.75	7.16	7.19	7.05	6.75	7.23		7.12	7.44	6.98	9.55

BASE QUANTITIES: Hot rolled sheets, cold rolled sheets, hot rolled strip, plates, shapes and hot rolled bars, 400 to 1999 lb., galvanized sheets, 150 to 1499 lb.; cold rolled strip, extras apply on all quantities; cold finished bars, 1500 lb. and over; SAE bars, 1000 lb. and over. Exceptions: Chicago, galvanized sheets, 500 to 1499 lb.; Philadelphia, galvanized sheets, one to nine bundles, cold rolled sheets, 1000 to 1999 lb.; Detroit, galvanized sheets, 500 to 1499 lb.; Buffalo, cold rolled sheets, 500 to 1500 lb., galvanized sheets, 450 to 1499 lb., cold rolled strips, 0.0971 in. thick; Boston, cold rolled and galvanized sheets, 450 to 3749 lb.; Birmingham, hot rolled sheets, strip and bars, plates and shapes, 400 to 3999 lb., galvanized sheets, 500 to 1499 lb.; St. Louis, cold rolled sheets, 400 to 1499 lb., galvanized sheets, 500 to 1499 lb., cold rolled strip 0.095 in. and lighter; Milwaukee, cold rolled sheets, 400 to 1499 lb., galvanized sheets, 500 to 1499 lb., New York, hot rolled sheets, 0 to 1999 lb., cold rolled sheets, 400 to 1499 lb.; St. Paul, galvanized and cold rolled sheets, any quantity, hot rolled bars, plates, shapes, hot rolled sheets, 400 to 14,999 lb.; Los Angeles, hot rolled sheets, bars, plates, cold rolled sheets, 300 to 1999 lb.; galvanized sheets, 1 to 6 bundles; cold finished bars, 1 to 99 lb.; SAE bars, 100 lb. Extras for size, quality, etc., apply on above quotations. *12 gage and heavier, \$3.43.

PIG IRON

All prices set in bold face type are maxima established by OPA on June 24, 1941. Other domestic prices are delivered quotations per gross ton computed on the basis of the official maxima.

	No. 2 Foundry	Basic	Bessemer	Malleable	Low Phosphorous	Charcoal
Boston	\$25.50	\$25.00	\$26.50	\$26.00		
Brooklyn	27.50			28.00		
Jersey City	26.53	26.03	27.53	27.03		
Philadelphia	25.84	25.34	26.84	26.34		
Bethlehem, Pa.	\$25.00	\$24.50	\$26.00	\$25.50		
Everett, Mass.	25.00	24.50	26.00	25.50		
Swedeland, Pa.	25.00	24.50	26.00	25.50		
Steelton, Pa.		24.50			\$29.50	
Birdsboro, Pa.	25.00	24.50	26.00	25.50	29.50	
Sparrows Point, Md.	25.00	24.50				
Erie, Pa.	24.00	23.50	25.00	24.50		
Neville Island, Pa.	24.00	23.50	24.50	24.00		
Sharpsville, Pa.*	24.00	23.50	24.50	24.00		
Buffalo	24.00	23.00	25.00	24.50	29.50	
Cincinnati	24.44	24.61		25.11		
Canton, Ohio	25.39	24.89	25.89	25.39		
Mansfield, Ohio	25.94	25.44	26.44	25.94		
St. Louis	24.50	24.02				
Chicago	24.00	23.50	24.50	24.00		\$31.34
Granite City, Ill.	24.00	23.50	24.50	24.00		
Cleveland	24.00	23.50	24.50	24.00		
Hamilton, Ohio	24.00	23.50		24.00		
Toledo	24.00	23.50	24.50	24.00		
Youngstown*	24.00	23.50	24.50	24.00		
Detroit	24.00	23.50	24.50	24.00		
Lake Superior fc.						\$28.00
Lyles, Tenn. fc.†						33.00
St. Paul	26.63		27.13	26.63		
Duluth	24.50		25.00	24.50		
Birmingham	20.38	19.00	25.00			
Los Angeles	27.50					
San Francisco	27.50					
Seattle	27.50					
Provo, Utah	22.00					
Montreal	27.50	27.50		28.00		
Toronto	25.50	25.50		26.00		

GRAY FORGE IRON

Valley or Pittsburgh furnace \$23.50

*Pittsburgh Coke & Iron Co. (Sharpsville, Pa., furnace only) and the Struthers Iron and Steel Co., Struthers, Ohio, may charge 50c. a ton in excess of basing point prices for No. 2 foundry, basic, bessemer and malleable.

Switching Charges: Basing point prices are subject to an additional charge for delivery within the switching limits of the respective districts.

Silicon Differentials: Basing point prices are subject to an additional charge not to exceed 50c. a ton for each 0.25 per cent silicon content in excess of base grade (1.75 per cent to 2.25 per cent).

Phosphorous Differential: Basing point prices are subject to a reduction of 38c. per ton for phosphorous content of 0.70 per cent and over.

†Price shown is for low-phosphorous iron; high-phosphorous sells for \$28.50 at the furnace.

Manganese Differentials: Basing point prices are subject to an additional charge not to exceed 50c. a ton for each 0.50 per cent manganese content in excess of 1.00 per cent.



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The first crucible saw steel ever made in America was cast at the plant of Henry Disston in 1855.

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DISSTON TOOL STEELS

PRICES

CORROSION AND HEAT- RESISTING STEELS

(Per lb. base price, f.o.b. Pittsburgh)

Chromium-Nickel Alloys

	No. 304	No. 302
Forging billets	21.25c.	20.40c.
Bars	25.00c.	24.00c.
Plates	29.00c.	27.00c.
Structural shapes	25.00c.	24.00c.
Sheets	36.00c.	34.00c.
Hot rolled strip	23.50c.	21.50c.
Cold rolled strip	30.00c.	28.00c.
Drawn wire	25.00c.	24.00c.

Straight-Chromium Alloys

	No. 410	No. 430	No. 442	No. 446
F. Billets	15.73c.	16.15c.	19.13c.	23.38c.
Bars	18.50c.	19.00c.	22.50c.	27.50c.
Plates	21.50c.	22.00c.	25.50c.	30.50c.
Sheets	26.50c.	29.00c.	32.50c.	36.50c.
Hotstrip	17.00c.	17.50c.	24.00c.	25.00c.
Cold st.	22.00c.	22.50c.	32.00c.	52.00c.

Chromium-Nickel Clad Steel (20%)

	No. 304
Plates	18.00c.*
Sheets	19.00c.

* Includes annealing and pickling.

ELECTRICAL SHEETS

(Base, f.o.b. Pittsburgh)

	Per Lb.
Field grade	3.20c.
Armature	3.55c.
Electrical	4.05c.
*Motor	4.95c.
*Dynamo	5.65c.
Transformer 72	6.15c.
Transformer 65	7.15c.
Transformer 58	7.65c.
Transformer 52	8.45c.

Silicon strip in coils—Sheet price plus silicon sheet extra width extra plus 25c. per 100 lb. for coils. Pacific ports add 75c. per 100 lb.

* In some instances motor grade is referred to as dynamo grade and dynamo grade is referred to as dynamo special.

ROOFING TERNE PLATE

(F.o.b. Pittsburgh, per
Package of 112 Sheets)

	20x14 in.	20x28 in.
8-lb. coating I.C.	\$6.00	\$12.00
15-lb. coating I.C.	7.00	14.00
20-lb. coating I.C.	7.50	15.00
25-lb. coating I.C.	8.00	16.00
30-lb. coating I.C.	8.63	17.25
40-lb. coating I.C.	9.75	19.50

BOLTS, NUTS, RIVETS, SET SCREWS

Bolts and Nuts

(F.o.b. Pittsburgh, Cleveland, Birmingham or Chicago)
Per Cent Off List

Machine and Carriage Bolts:

6½ in., shorter and smaller	65½
6 x ¾ in., and shorter	63½
6 in. by ¾ to 1 in. and shorter	61
1½ in. and larger, all length	59
All diameters over 6 in. long	59
Lag, all sizes	62
Plow bolts	65

Nuts, Cold Punched or Hot Pressed:

(hexagon or square)

½ in. and smaller	62
9/16 to 1 in. inclusive	59
1½ to 1½ in. inclusive	57
1½ in. and larger	56

On above bolts and nuts, excepting plow bolts, additional allowance of 10 per cent for full container quantities. There is an additional 5 per cent allowance for carload shipments.

Semi-Fin. Hexagon Nuts	U.S.S.	S.A.E.
7/16 in. and smaller	64	
½ in. and smaller	62	
½ in. through 1 in.	60	
9/16 to 1 in.	59	
1½ in. through 1½ in.	57	58
1½ in. and larger	56	

In full container lots, 10 per cent additional discount.

Stove bolts, packages, nuts loose	71 and 10
Stove bolts in packages, with nuts attached	71
Stove bolts in bulk	80

On stove bolts freight allowed up to 65c. per 100 lb. based on Cleveland, Chicago, New York lots of 200 lb. or over.

Large Rivets

(½ in. and larger)

	Base per 100 lb.
F.o.b. Pittsburgh, Cleveland, Chicago, Birmingham	\$3.75

Small Rivets

(7/16 in. and smaller)

	Per Cent Off List
F.o.b. Pittsburgh, Cleveland, Chicago, Birmingham	65 and 5

Cap and Set Screws

Per Cent Off List

Upset hex. head cap screws U.S.S. or S.A.E. thread, 1 in. and smaller	60
Upset set screws, cup and oval points	68
Milled studs	40
Flat head cap screws, listed sizes	30
Filister head cap, listed sizes	46

Freight allowed up to 65c. per 100 lb. based on Cleveland, Chicago or New York on lots of 200 lb. or over.

WIRE PRODUCTS

(To the trade, f.o.b. Pittsburgh, Chicago, Cleveland, Birmingham)

	Base per Keg
Standard wire nails	\$2.55
Coated nails	2.55
Cutnails, carloads	3.85
	Base per 100 Lb.
Annealed fence wire	\$3.05
	Base Column
Woven wire fence*	67
Fence posts (carloads)	69
Single loop bale ties	59
Galvanized barbed wire†	70
Twisted barless wire	70

* 15½ gage and heavier. † On 80-rod spools in carload quantities.

Note: Birmingham base same on above items, except spring wire.

BOILER TUBES

Seamless Steel and Lap Weld Commercial
Boiler Tubes and Locomotive Tubes
Minimum Wall
(Net base prices per 100 ft., f.o.b. Pittsburgh, in carload lots)

	Seamless	Lap Weld	Cold Hot	Drawn Rolled
2 in. o.d. 13 B.W.G.	15.03	13.04	12.38	
2½ in. o.d. 12 B.W.G.	20.21	17.54	16.58	
3 in. o.d. 12 B.W.G.	22.48	19.50	18.35	
3½ in. o.d. 11 B.W.G.	28.37	24.62	23.15	
4 in. o.d. 10 B.W.G.	35.20	30.54	28.66	
(Extras for less carload quantities)				
40,000 lb. or ft. over	Base			
30,000 lb. or ft. to 39,999 lb. or ft.	5%			
20,000 lb. or ft. to 29,999 lb. or ft.	10%			
10,000 lb. or ft. to 19,999 lb. or ft.	20%			
5,000 lb. or ft. to 9,999 lb. or ft.	30%			
2,000 lb. or ft. to 4,999 lb. or ft.	45%			
Under 2,000 lb. or ft.	65%			

STEEL AND WROUGHT IRON PIPE AND TUBING

Welded Pipe

Base Discounts, f.o.b. Pittsburgh District
and Lorain, Ohio, Mills
(F.o.b. Pittsburgh only on wrought pipe)

Base Price = \$200 Per Net Ton

Steel (Butt Weld)

	Black	Galv.
½ in.	63½	51
¾ in.	66½	55
1 to 3 in.	68½	57½

Wrought Iron (Butt Weld)

½ in.	24	3½
¾ in.	30	10
1 and 1½ in.	34	16
1½ in.	38	18½
2 in.	37½	18

Steel (Lap Weld)

2 in.	61	49½
2½ and 3 in.	64	52½
3½ to 6 in.	66	54½

Wrought Iron (Lap Weld)

2 in.	30½	12
2½ to 3½ in.	31½	14½
4 in.	33½	18
4½ to 8 in.	32½	17

Steel (Butt, extra strong, plain ends)

	Black	Galv.
½ in.	61½	50½
¾ in.	65½	54½
1 to 3 in.	67	57

Wrought Iron (Same as Above)

½ in.	25	6
¾ in.	31	12
1 to 2 in.	38	19½

Steel (Lap, extra strong, plain ends)

2 in.	59	48½
2½ and 3 in.	63	52½
3½ to 6 in.	66½	56

Wrought Iron (Same as Above)

2 in.	33½	15½
2½ to 4 in.	39	22½
4½ to 6 in.	37½	21

On butt weld and lap weld steel pipe jobbers are granted a discount of 5%. On less-than-carload shipments prices are determined by adding 25 and 30% and the carload freight rate to the base card.

F.o.b. Gary prices are two points lower discount or \$4 a ton higher than Pittsburgh or Lorain on lap weld and one point lower discount, or \$2 a ton higher on all butt weld 8 in. and smaller.

CAST IRON WATER PIPE

Per Net Ton

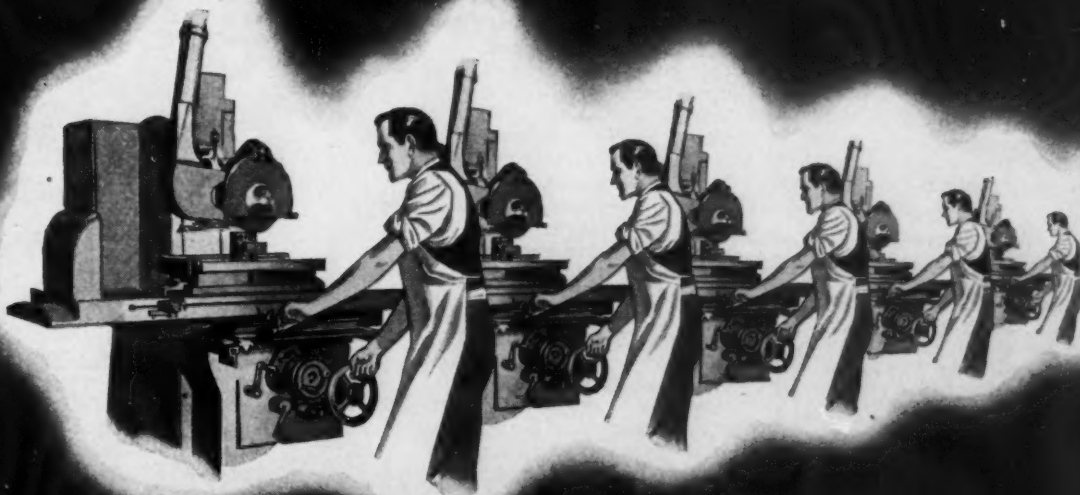
6-in. and larger, del'd Chicago	\$54.80
6-in. and larger, del'd New York	52.20
6-in. and larger, Birmingham	46.00
6-in. and larger f.o.b. dock, San Francisco or Los Angeles or Seattle	56.00

Class "A" and gas pipe, \$3 extra; 4-in. pipe is \$3 a ton above 6-in. Prices shown are for lots of less than 200 tons. For 200 tons or over, 6-in. and larger is \$45 at Birmingham and \$53.80 delivered Chicago.

FUEL OIL

No. 3, f.o.b. Bayonne, N. J.	5.20c.
No. 6, f.o.b. Bayonne, N. J.	3.21c.
No. 6 Bur. Stds., del'd Chicago	4.50c.
No. 3 distillate del'd Cleveland	6.50c.
No. 4 indus., del'd Cleveland	6.00c.
No. 6 indus., del'd Cleveland	5.00c.

**2 TO 5 TIMES
MORE PRODUCTION
PER MAN PER MACHINE**



Courage to try a new Grinding Wheel may solve your labor and machine shortage now

AT THIS CRITICAL TIME in war production, Radiac comes to your aid with a new type of precision grinding wheel. This new wheel, called Por-os-way, is different from any wheel you have ever tried before.

Properly used it takes deeper cuts, breezing through .010" or more. It grinds 100 to 400% faster, increasing production per man per machine 2 to 5 times. But that's not all. Por-os-way shows little tendency to load or burn the work. Here's the reason. Por-os-way is made by a new patented process. The structure, instead of being "sandy" and com-

pact is "stringy" and porous—something like a sponge. Millions of air cells allow the air to keep every grinding contact cool. Yet Por-os-way is hard, tough, holds the corner and requires very little dressing—due to a new vitrified bond.

Por-os-way grinds hard alloys with ease; copper, aluminum, wood, rubber, plastics and other soft materials with minimum loading. See this wheel. Try it and learn how much faster and cooler it grinds. Write today for a trial demonstration on your machines. A. P. DE SANNO & SON, INC., 434 Wheatland Street, PHOENIXVILLE, PENNSYLVANIA.

ASK FOR A
DEMONSTRATION

*T. M. REG.
U. S. PAT. OFF.



POR-OS-WAY* a new **RADIAC*** PRODUCT

Copyright 1942 by A. P. DE SANNO & SON, INC.

PRICES

FERROALLOYS

Ferromanganese

F.o.b. New York, Philadelphia, Baltimore, Mobile or New Orleans, Domestic, 80%, per gross ton (carloads).....\$120.00

Spiegeleisen

Per Gross Ton Furnace

Domestic, 19 to 21%.....\$36.00
Domestic, 26 to 28%..... 49.50

Electric Ferrosilicon

(Per Gross Ton, Delivered Lump Size)

50% (carload lots, bulk).....\$74.50
50% (ton lots, packed)..... 87.00
75% (carload lots, bulk).....135.00
75% (ton lots, packed).....151.00

Silvery Iron

(Per Gross Ton, base 6.00 to 6.50 \$4)

F.O.B. Jackson, Ohio.....\$29.50*
Buffalo.....\$30.75*

For each additional 0.50% silicon add \$1 a ton. For each 0.50% manganese over 1% add 50c. a ton. Add \$1 a ton for 0.75% phosphorus or over.

*Official OPACS price established June 24.

Bessemer Ferrosilicon

Prices are \$1 a ton above Silvery Iron quotations of comparable analysis.

Ferrochrome

(Per Lb. Contained Cr, Delivered Carlots, Lump Size, on Contract)

4 to 6 carbon.....18.00c.
2 carbon.....19.50c.
1 carbon.....20.50c.
0.10 carbon.....22.50c.
0.06 carbon.....23.00c.

Spot prices are ¼c. per lb. of contained chromium higher.

Silico-Manganese

(Per Gross Ton, Delivered, Lump Size, Bulk, on Contract)

3 carbon.....\$113.00*
2.50 carbon.....118.00*
2 carbon.....123.00*
1 carbon.....133.00*

Other Ferroalloys

Ferrotungsten, per lb. contained W, del'd carload.... \$2.00
Ferrotungsten, 100 lb. and less \$2.25

Ferrovanadium, contract, per lb. contained V, del'd \$2.70 to \$2.90†

Ferrocolumbium, per lb. contained Cb, f.o.b. Niagara Falls, N. Y., ton lots..... \$2.25†

Ferrocobaltititanium, 15-18 Ti, 7-8 C, f.o.b. furnace, carload, contract, net ton.....\$142.50

Ferrocobaltititanium, 17-20 Ti, 3-5 C, f.o.b. furnace, carload, contract, net ton.....\$157.50

Ferrophosphorus, electric or blast furnace material, carloads, f.o.b. Anniston, Ala., for 18%, with \$3 unitage freight, equalized with Rockdale, Tenn., gross ton..... \$58.50

Ferrophosphorus, electrolytic 23-26%, carlots, f.o.b. Monsanto (Siglo), Tenn., \$3 unitage, freight equalized with Nashville, gross ton..... \$75.00

Ferromolybdenum, per lb. Mo, f.o.b. furnace..... 95c.

Calcium molybdate, per lb. Mo, f.o.b. furnace..... 80c.

Molybdenum oxide briquettes 48-52 Mo, per lb. contained Mo, f.o.b. Langeloth, Pa.... 80c.

Molybdenum oxide, in cans, per lb. contained Mo, f.o.b. Langeloth, and Washington, Pa. 80c.

*Spot prices are \$5 per ton higher.

†Spot prices are 10c. per lb. of contained element higher.

ORES

Lake Superior Ores (51.50% Fe.)

(Delivered Lower Lake Ports)

Per Gross Ton
Old range, bessemer, 51.50.... \$4.75
Old range, non-bessemer, 51.50 4.80
Mesaba, bessemer, 51.50..... 4.80
Mesaba, non-bessemer, 51.50... 4.45
High phosphorus, 51.50..... 4.35

Foreign Ores*

(C.I.f. Philadelphia or Baltimore, Exclusive of Duty)

Per Unit
African, 46-48 Mn.....66.5c. to 68c.
Indian, 48-50 Mn.....68c. to 70c.

Furnace

Per Net Ton

†Connellsville, prompt..... \$6.00

Foundry

†Connellsville, prompt . \$6.75 to \$7.00

*Maximum by-product coke prices established by OPA became effective Oct. 1, 1941. A complete schedule of the ceiling prices was published in THE IRON AGE, Sept. 25, p. 94B. Maximum beehive furnace coke prices established by OPA, Jan. 28. †F.O.B. even.

COKE*

By-product, Chicago.....\$12.25

By-product, New England.....\$13.75

By-product, Newark, \$12.40 to \$12.95

By-product, Philadelphia.....\$12.38

By-product, Cleveland.....\$12.30

By-product, Cincinnati.....\$11.75

By-product, Birmingham.....\$8.50†

By-product, St. Louis.....\$12.02

By-product, Buffalo.....\$12.50

RAILS, TRACK SUPPLIES

(F.o.b. Mill)

Standard rails, heavier than 60 lb., gross ton.....\$40.00
Angle bars, 100 lb..... 2.70

(F.o.b. Basing Points) Per Gross Ton

Light rails (from billets).....\$40.00
Light rails (from rail steel)... 39.00

Base per Lb.

Cut spikes..... 3.00c.

Screw spikes..... 5.15c.

Tie plates, steel..... 2.15c.

Tie plates, Pacific Coast..... 2.30c.

Track bolts, heat treated, to railroads..... 5.00c.

Track bolts, jobbers discount.. 63-5

Basing points, light rails—Pittsburgh, Chicago, Birmingham; spikes and tie plates—Pittsburgh, Chicago, Portsmouth, Ohio, Weirton, W. Va., St. Louis, Kansas City, Minneapqua, Colo., Birmingham and Pacific Coast ports; tie plates alone—Steelton, Pa., Buffalo; spikes alone—Youngstown, Lebanon, Pa., Richmond, Va

FLUORSPAR

Per Net Ton

Domestic washed gravel, 85-5

f.o.b. Kentucky and Illinois

mines, all rail.....\$25.00

Domestic, f.o.b. Ohio River land-

ing barges..... 25.00

No. 2 lump, 85-5 f.o.b. Kentucky

and Illinois mines..... 25.00

Foreign, 85% calcium fluoride,

not over 5% Si, c.i.f. Atlantic

ports, duty paid.....Nominal

Domestic No. 1 ground bulk, 96

to 98%, calcium fluoride, not

over 2½% silicon, f.o.b. Illi-

nois and Kentucky mines....\$34.00

As above, in bags, f.o.b. same

mines..... 36.40

REFRACTORIES

(F.o.b. Works)

Fire Clay Brick Per 1000

Super-duty brick, St. Louis...\$64.60

First quality, Pennsylvania,

Maryland, Kentucky, Missouri

and Illinois..... 51.30

First quality, New Jersey..... 56.00

Second quality, Pennsylvania,

Maryland, Kentucky, Missouri

and Illinois..... 46.55

Second quality, New Jersey... 51.00

No. 1, Ohio..... 43.00

Ground fire clay, net ton..... 7.60

Silica Brick

Pennsylvania.....\$51.30

Chicago District..... 58.90

Birmingham..... 51.30

Silica cement, net ton (Eastern) 9.00

Chrome Brick

Per Net Ton

Standard, f.o.b. Baltimore, Plym-

outh Meeting and Chester...\$54.00

Chemically bonded, f.o.b. Balti-

more, Plymouth Meeting and

Chester, Pa..... 54.00

Magnesite Brick

Standard f.o.b. Baltimore and

Chester.....\$76.00

Chemically bonded, f.o.b. Balti-

more..... 65.00

Grain Magnesite

Domestic, f.o.b. Baltimore and

Chester in sacks.....\$44.00

Domestic, f.o.b. Chewelah, Wash.

(in bulk)..... 22.00

THE IRON AGE.

TWO SECTIONS

SECTION TWO

PRICE SECTION

Corrected to Feb. 9, 1942

Copyright, 1942

Knowledge of Price Controls Essential

• • • Buyers as well as sellers are now directed by law to respect price maximums or ceilings and to abide by all other regulations established by the Office of Price Administration. Under the Emergency Price Control Act signed by the President Jan. 30, 1942, violators of price ceilings and regulations are liable to penalties of up to \$5000 and two years in jail. Persons charged more than price ceilings may sue for triple damages or \$50, whichever is larger. Business affected by price orders may be licensed.

This price section, edited for the metals, metalworking and allied industries, contains highlights of the price control measures. It is intended for quick reference. It cuts through the voluminous wordage in the individual price orders and spotlights the important price information. See THE IRON AGE each week for price developments.

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Aluminum, scrap	2	4	Lead, secondary	70	14
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Borax and Boric Acid		3	Machine tools, second hand	1	4
Brass and Bronze ingot		13	Machinery, ceramic		3
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Bronze and Brass, ingot		13	glass making		3
Cable	82	15	mining		3
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Carbon black		3	textile		3
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Carbon Tetrachloride	79	16	woodworking		3
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Coke byproduct, foundry	29	9	Metallic lead		3
Coke Oven Byproduct Chemicals		3	Monel metal scrap	8	6
Copper	15	7	Nickel scrap	8	6
Copper scrap	20	8	Nonferrous castings		3
Cranes		3	OPA directory		20
Cupro-nickel alloy scrap	8	6	Oxalic Acid	78	16
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(Continued on Page 2)

PRICE SECTION

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3	Zinc, secondary slab and scrap	4	46	Relaying rail	10
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17	Tin, pig	8	75	Magnesite, grain	13
20	Copper scrap	8	77	Beehive furnace coke	13
29	Coke, byproduct, foundry	9	78	Oxalic Acid	14
			79	Carbon Tetrachloride	14
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Highlights of New Price Control Law

• • • The Emergency Price Control Law, signed by President Roosevelt Jan. 30, became effective immediately. It expires June 30, 1943, unless revoked sooner. Highlights of the new law include:

Granting of power to the Price Administrator to order maximum price ceilings for a long list of products and commodities needed for war or civilian use. These are to be fixed preferably at levels of Oct. 1 to Oct. 15, 1941, and preferably after consultation with the industry involved.

Business affected by the price orders may be licensed and this license taken away in court for a second offense after warning on a first offense.

Violations of price ceilings and regulations may bring penalty up to \$5000 and two years in jail.

Power is given the Price Administrator to buy or sell, store or use, commodities, in order to influence prices.

The Price Administrator has power to inspect inventories, records, reports and other documents.

Persons charged more than price ceilings may sue for triple damages or \$50, whichever is higher.

In the event OPA learns of persons engaged in or about to engage in any acts or practices which will constitute a violation of the price law (regardless of contracts or other obligations entered into) OPA may apply for an injunction.

The law provides that within 60 days after the effective date of price schedules, affected persons may file a protest. In 30 to 90 days OPA shall rule on the

protest. If the protest is denied or partially denied, an appeal may be filed with the newly created Emergency Court of Appeals and eventually the case may be carried to the Supreme Court.

Provisions Common to Most Price Ceiling Orders

• • • Evasion: Price ceiling orders specify that maximum price limitations shall not be exceeded or evaded by direct or indirect methods in connection with purchases, sales, deliveries, or transfers of the product, alone or in conjunction with any other material, or by way of any commission, service, transportation, or other charge, discount, premium or privilege, or by tying-in agreements, trade understandings or other methods.

Less than Maximum Prices: Lower prices than those set in the official price ceiling orders may be charged, demanded, paid or offered.

Responsibility on buyer: In addition to prohibiting sellers from exceeding maximum ceilings, no persons are allowed to buy, offer to buy, or accept delivery of the product at higher than ceiling prices.

Records and Reports: Persons making purchase or sales of the product are required to keep for inspection by OPA for one year (and in some cases longer) complete and accurate records of transactions and inventory data.

Modification: Persons complaining of hardship or inequity are invited to apply to OPA providing they are complying with the schedule and all other schedules.

Voluntary Price Ceilings; OPA Stabilization Efforts

In general, the following table summarizes price actions in industries where no formal price schedules have been issued. The government agency making the requests or warnings mentioned below is OPA or its predecessor, OPACS.

Abrasives (coated and bonded)—Jan. 23, 1942—Manufacturers requested not to sell at prices above those each had in effect Oct. 1, 1941. If necessary to make increases, OPA must be notified one month in advance and supporting data presented.

Borax and Boric Acid—Jan. 28, 1942—Advances of \$1 a ton on borax and \$2 a ton on boric acid were permitted by OPA until March 24, 1942. Maximum prices per ton f. o. b. producer's plant, freight allowed to destination, are: borax, granular technical in bulk, \$41.50; boric acid, granular technical in bulk, \$95.50; regular differentials to apply to shipments in containers and in commercial forms.

Brick—See Refractories.

Carbon Black—June 23, 1941—Producers and distributors asked not to make price increase of 12½ per cent for third quarter. (On deliveries beginning Jan. 1, 1942, price advances permitted.)

Castings, non-ferrous—Feb. 2, 1942—Foundry operators requested not to charge prices higher than those prevailing Oct. 1-15, 1941. Castings substantially different from those sold in the specified period are to be priced upon the Oct. 1-15 cost factors. Deliveries completed before Mar. 1 on contracts entered prior to Feb. 1 are exempted. Applications may be made for relief. Foundries must file cost, sales and profits data by Feb. 15; affirmations of compliance on or before Mar. 15, June 15, Sept. 15, Dec. 15.

Coke Oven Byproduct Chemicals—Dec. 16, 1941—Producers of benzol, toluol, xylol, solvent naphtha (from byproduct ovens) asked not to sell during first quarter of 1942 at over 1c. per gallon above fourth quarter of 1941.

Cranes, Hoists, Derricks—Jan. 5, 1942—Makers asked not to raise net sales prices above levels prevailing Oct. 1, 1941.

Derricks—See Cranes.

Drop Forgings—Nov. 13, 1941—Producers asked not to exceed prices that prevailed Oct. 10. Meeting called to discuss a longer range price program.

Engines, diesel—Dec. 20, 1941—Makers asked to adhere to Oct. 1 prices.

Electrical Appliances, small, for households—Nov. 25, 1941—Makers asked to hold prices at Nov. 1 levels.

Farm Implements—April 22, 1941—Makers asked not to increase prices.

Farm Implements and Parts—Jan. 29, 1942—Dealers requested to stabilize farm implement and tractor prices at levels no higher than those suggested by producers, plus actual freight and handling costs and sales taxes.

Fluorspar—Jan. 23, 1942—Producers asked not to publish, quote prices on, or sell fluorspar above prices in effect Jan. 2, 1942. If increases are necessary, OPA must be informed one month in advance and supporting data presented.

Forgings—Jan. 28, 1942—Makers of open die steel forgings asked not to sell above the Oct. 10, 1941, price levels.

Ferromanganese—Dec. 11, 1941—Major producers indicate they will not advance prices for first quarter of 1942 beyond fourth quarter of 1941 levels.

Ferrosilicon—Dec. 11, 1941—Producers agree to maintain fourth quarter prices during first quarter of 1942. The 50 per cent grade which represents the largest tonnage production is \$74.50 per gross ton in carload lots, with freight allowance to St. Louis.

Gears, Speed Reducers & Sprockets—Jan. 29, 1942—Manufacturers asked to refrain from selling products at prices higher than those in effect Oct. 15, 1941.

Implements, Farm—See Farm.

Iridium—Jan. 15, 1941—OPACS says further price advances unjustified.

Lead products—Jan. 20, 1942—Makers of lead pipe sheets, type and bearing metals, solder, ammunition and other metallic lead products asked not to exceed prices obtained by adding to their April 1, 1941, prices, \$0.0065 per lb. of lead contained in each product. This modified an earlier request to hold prices at Jan. 2 levels and resulted from establishment of a formal price schedule on primary lead.

Machinery, mining—Oct. 11, 1941—Producers asked to refrain from advancing prices.

Machinery, glass making—Nov. 6, 1941—Prices stabilized at July 29, 1941, levels.

Machinery, cranes, hoists and derricks—Jan. 5, 1942—Makers asked not to raise net sales prices above Oct. 1, 1941, levels.

Machinery, ceramic—Jan. 5, 1942—Makers asked to adhere to level prevailing Oct. 1, 1941.

Machinery, printing—Nov. 6, 1941—Prices stabilized at level of July 29, 1941.

Machinery, textile—Dec. 1, 1941—Makers asked to refrain from price increases. Study being made toward formal schedule of maximum prices.

Machinery, shoe—Dec. 2, 1941—Manufacturers asked not to increase rental prices while study is being made toward formal price schedule.

Machinery, woodworking—Jan. 10, 1942—Makers asked to stabilize prices at Oct. 1, 1941, levels.

Measuring Instruments, mechanical—Jan. 1942—Four makers (American Meter Co., Crosby Steam Gage Valve Co., Mason-Neelan Regulator Co., Mercoid Corp.) withdrew price increases previously in effect and cancelled increases proposed for Jan. 1942. OPA asks that prices be stabilized at July 29, 1941, levels.

Metallic Lead—See Lead.

Nonferrous Castings—See Castings.

Paper; book, printing and writing—Nov. 27, 1941—Prices stabilized for first quarter of 1942 at level of fourth quarter of 1941.

Portable power driven tools—Jan. 9, 1942—Manufacturers asked not to raise net selling prices above those prevailing Oct. 1, 1941.

Pulp—Oct. 10, 1941—Agreements obtained with producers not to exceed over remainder of 1941 the prices that generally prevailed during third quarter. On Nov. 26 agreements were extended for first quarter of 1942.

Pyrophosphate—Dec. 12, 1941—A major producer reduces prices from 5¼c. to 5¼c. per lb. and agrees to keep price reduced in first quarter of 1942.

Railroad car wheels—June 25, 1941—Makers asked to withdraw price increase proposed for July 1.

Railroad equipment—Nov. 21, 1941—Makers requested to adhere to Oct. 1 levels.

Refractories, basic—Feb. 2, 1942—On all grades, all makers agree to maintain unchanged for three months prices which have prevailed since Oct. 25, 1941.

Silico-manganese—Dec. 11, 1941—Producers have entered into individual agreements with OPA not to raise prices in first quarter of 1942.

Speed Reducers—See Gears.

Sprockets—See Gears.

Sulphur—Jan. 19, 1942—Freeport Sulphur Co. has offered to sell through 1942 at 1941 base price of \$16 per ton, f. o. b. mines.

Sulphuric Acid—Dec. 18, 1941—A leading producer agrees to continue during first quarter of 1942 the prices of final 1941 quarter.

Tires, Retreadable and Retreads—Jan. 12, 1942—Emergency ceilings announced.

Tires, for Farm Machinery—Jan. 15, 1942—Price increases established as of Jan. 1 were voluntarily rescinded.

Wrought Washers, plain—Jan. 16, 1942—Manufacturers asked to refrain from price increases beyond levels existing Dec. 1, 1941.

Zinc Sheets, Strip and Plates—Dec. 2, 1941—Producers asked to adhere to OPA-approved price list effective Dec. 5.

Price Schedule No. 1

Second Hand Machine Tools

(Exclusive of extras)

Date of Manufacture	Condition (see below)	Maximum Price*
1. Jan. 1, 1936, and after	A	95%
	B	75%
2. Jan. 1, 1930, to Dec. 31, 1935	A	90%
	B	70%
3. Jan. 1, 1920, to Dec. 31, 1929	A	80%
	B	60%
4. Before Jan. 1, 1920	A	70%
	B	50%

A—Rebuilt and guaranteed. B—Others.

*Price expressed in terms of percentage of the March 1, 1941, price of equivalent new machine tool. Prices include commissions.

Notes: Schedule issued Feb. 17, 1941. Date of manufacture can be determined from serial number. Rebuilt

and guaranteed tools are those which (1) have been rebuilt or are in equivalent condition to a rebuilt machine and is invoiced as such; (2) have been tested under power so as to prove that they have a performance essentially equivalent to that of the machine when new, and (3) carry a binding guaranty of satisfactory performance for a period of not less than 30 days.

Machine tools formerly equipped with a cone drive are now often manufactured with a geared head. In such cases determine the price of an equivalent new machine by deducting 20 per cent from March 1, 1941, price of the new geared-head tool. Each dealer must file with OPA a report (Form 100:1) on each floor type second-hand machine tool in his stock or purchased through him, and a report on each tool sold or otherwise disposed of.

The Chase Agency

Price Schedule No. 2

Aluminum Scrap and Secondary Ingot

Aluminum Scrap

(Cents per lb., f.o.b. point of shipment)

Grade*	I Lots of Less Than 1,000 Pounds	II *Lots of 1,000 to 20,000 Pounds	III †Lots of 20,000 Pounds or More
Plant Scrap			
Segregated 2S clips or other 2S solids..	10.00	11.00	11.50
Mixed clips or other mixed solids.....	8.50	9.50	10.00
Segregated borings and turnings.....	7.50	8.50	9.00
Mixed borings and turnings.....	6.50	7.50	8.00
Obsolete Scrap			
Pure cable	10.00	11.00	11.50
Old sheet and utensils.....	9.50	10.50	11.00
Old castings and forgings.....	10.00	10.50	11.00
Pistons free of struts.....	10.00	10.50	11.00
Pistons with struts.....	8.00	8.50	9.00

Segregated solid plant scrap other than 2S maximum prices are not established for solid plant scrap other than 2S which is segregated, identified, handled, sold, and delivered in accordance with supplementary order M-1-d or other instructions and regulations issued by OPM. Scrap of this description is not subject to the price schedule.

*If shipped by truck; or 1000 pounds to minimum carload, if shipped by rail.

†If shipped by truck; or minimum carload if shipped by rail.

"Plant Scrap" means scrap generated during fabrication or manufacture and includes new material, parts rejected, etc. "Solids" and "Solid Plant Scrap" mean plant scrap generated by shearing, clipping, cutting, blanking, etc., also defective or rejected wrought aluminum parts, defective or rejected castings and gates, sprues, risers or similar foundry scrap. Scrap shall not be deemed "segregated," whether in the form of solids or in the form of borings, turnings or other machinings, unless it consists of one alloy only and is so identified and handled as to be acceptable for reprocessing into aluminum of the original alloy specifications.

Prices (above) apply to scrap which is clean and dry and which otherwise meets generally accepted maximum standards of the trade. Scrap which fails to meet such standards should be sold at prices below the above ceilings at least in proportion to the content of moisture and other foreign matter.

Quantities in columns 2 and 3 may consist of various grades of scrap; other metals may not enter into the

computation. It will be considered that the requisite quantity has been sold and shipped, in case delivery is made by truck, if such quantity is sold in one lot and delivery is made within a period of 72 consecutive hours. A minimum carload is the minimum quantity required to obtain the railroad carload rate from the point of shipment to the destination.

Aluminum Secondary Ingot

(cents per lb. f.o.b. point of shipment)

(For quantities of 30,000 lb. or more)

Grade	Maximum Price
98% pure ingot	15c.
Silicon alloys	15c.
Piston alloys	14½c.
No. 12 aluminum	14½c.
Deoxidizing aluminum	13½c.
(2c. more for special shapes.)	

Quantity Differentials

Following premiums may be charged, in addition to the maximum prices listed:

Quantity	Premium
10,000 to 30,000 lbs.	¼c. per lb.
1000 to 10,000 lbs.	½c. per lb.
Less than 1000 lbs.	1c. per lb.

Notes:

Schedule became effective March 25, 1941. Tables above include Jan. 1 revisions.

The Chase Agency

Price Schedule No. 3

Secondary, Scrap Zinc
Zinc Scrap

	Cents per lb.
(1) New clippings and trimmings...	7.35
(2) Engravers' and lithographers' plates	7.25
(3) Old scrap	5.75
(4) Unsweated dross	5.80
(5) Die cast slab	5.80
(6) New die cast scrap	4.95
(7) Old die cast scrap	4.50
(8) Radiator grilles, old and new...	4.90

Prices above are maximums after free and other foreign materials are removed.

Notes: Original schedule became effective March 31, 1941. Latest revision Feb. 4, 1942. Quantity premium of ¼c. a lb. maximum for single shipments of 10,000 lb. or more on items (1), (2) and (3), or any combination of those grades; also on single shipments of 20,000 lb. or more of items (4), (5) and (8), or any combination of those grades. A single shipment means all deliveries made to a buyer within 48 consecutive hours.

Secondary Slab Zinc

"Secondary slab zinc"—More than 50 per cent of zinc content shall be obtained from scrap material by distillation, remelting, electrolysis, or other method.

Carlot is minimum quantity required to obtain railroad carlot freight rates from shipping point to destination.

Grade	Base price per lb.
Prime Western or poorer	8.25c.
Selected	8.35c.
Brass special	8.50c.
Intermediate or higher	8.75c.

CARLOAD LOTS, DELIVERED BUYER'S RECEIVING POINT

Grade	Maximum per lb.
Prime Western or poorer	Base price plus carload freight from St. Louis to buyer's receiving point.
Selected	
Brass Special	
Intermediate or higher	

LESS THAN CARLOADS

(By producer of the zinc sold)

Sales in Lots of (lbs.)	Maximum per lb. (f.o.b. point of shipment)
20,000 and under carload.....	Base plus 1.50c.
10,000 and under 20,000.....	Base plus 2.50c.
2000 and under 10,000.....	Base plus 4.50c.
Less than 2000 lb.....	Base plus 5.50c.

*Plus carload freight from E. St. Louis to point of shipment.

Sales by All Except Producers

Sales in lots of (lbs.)	Maximum per lb. (f.o.b. point of shipment)
20,000 and under carload.....	Base plus 1.50c.
10,000 and under 20,000.....	Base plus 2.50c.
2000 and under 10,000.....	Base plus 4.50c.
Less than 2000 lb.....	Base plus 5.50c.

*Plus carload freight from E. St. Louis to point of shipment.

Specifications for Above Grades

Maximum Impurities—Per Cent

Grade	Lead	Iron	Cadmium	Antimony
Intermediate ...	0.20	0.03	0.50	0.10
Brass Special ...	0.60	0.03	0.50	0.10
Selected	0.80	0.04	0.75	0.25
Prime Western. 1.60	0.08	...	...	...

*Aluminum prohibited in all grades.

PRICE SECTION

Price Schedule No. 4 — Iron and Steel Scrap

Revised to Feb. 5, 1942 (Latest Revisions Are Summarized in Feb. 12 issue, pages 138-140)
(All the prices given below are per gross ton and are basing point prices from which shipping point prices and consumer's delivered prices are to be computed)

IRON AND STEEL (OTHER THAN RAILROAD) SCRAP

BASIC OPEN HEARTH GRADES (No. 1 Heavy Melting; No. 1 Hydr. Com- pressed Black Sheets; No. 2 Heavy Melting; Dealers' No. 1 Bundles; Dealers' No. 2 Bundles; No. 1 Busheling)	Machine Shop Turnings	BLAST FURNACE GRADES (Mixed Borings and Turnings; Shovelling Turnings; No. 2 Busheling; Cast Iron Borings)	ELECTRIC FURNACE, ACID OPEN HEARTH AND FOUNDRY GRADES												
			Low Phos.			Heavy Structural and Plate			Cut Auto. Steel Scrap			Alloy free Low Phos. and Sulphur Turnings	Heavy Axle and Forge Turn. First Cut	Electric Furnace Bundles	
			Billet, Bloom, Forge Crops	Bar Crops and Smaller	Punch- ings and Plate	3 ft. and Under	2 ft. and Under	1 ft. and Under	3 ft. and Under	2 ft. and Under	1 ft. and Under				
.....	\$20.00	\$16.00	\$16.00	\$25.00	\$22.50	\$22.50	\$21.00	\$21.50	\$22.00	\$20.00	\$20.50	\$21.00	\$18.00	\$19.50	\$21.00
.....	19.50	15.50	15.50	24.50	22.00	22.00	20.50	21.00	21.50	19.50	20.00	20.50	17.50	19.00	20.50
.....	18.75	14.75	14.75	23.75	21.25	21.25	19.75	20.25	20.75	18.75	19.25	19.75	16.75	18.25	19.75
.....	19.50	15.50	15.50	24.50	22.00	22.00	20.50	21.00	21.50	19.50	20.00	20.50	17.50	19.00	20.50
.....	19.25	15.25	15.25	24.25	21.75	21.75	20.25	20.75	21.25	19.25	19.75	20.25	17.25	18.75	20.25
.....	18.25	14.25	14.25	23.25	20.75	20.75	19.25	19.75	20.25	18.25	18.75	19.25	16.25	17.75	19.25
.....	18.00	14.00	14.00	23.00	20.50	20.50	19.00	19.50	20.00	18.00	18.50	19.00	16.00	17.50	19.00
.....	17.85	13.85	13.85	22.85	20.35	20.35	18.85	19.35	19.85	17.85	18.35	18.85	15.85	17.35	18.85
.....	17.50	13.50	13.50	22.50	22.00	20.00	18.50	19.00	19.50	17.50	18.00	18.50	15.50	17.00	18.50
.....	17.00	13.00	13.00	22.00	19.50	19.50	18.00	18.50	19.00	17.00	17.50	18.00	15.00	16.50	18.00
.....	16.50	12.50	12.50	21.50	19.00	19.00	17.50	18.00	18.50	16.50	17.00	17.50	14.50	16.00	17.50
.....	14.50	10.50	10.50	19.50	17.00	17.00	15.50	16.00	16.50	14.50	15.00	15.50	12.50	14.00	15.50
.....	.....	.....	.....	.....	15.50	15.50	14.00	14.50	15.00	13.00	13.50	14.00	11.00	12.50	14.00

PITTSBURGH basing point includes switching districts of Bessemer, Homestead, Duquesne, Munhall and McKeesport. Cincinnati basing point includes Newport, Ky., switching district. St. Louis includes switching districts of Granite City, East St. Louis, Madison, Ill. San Francisco includes switching districts of S. San Francisco, Niles and Oakland, Cal.

MAXIMUM prices of inferior grades shall continue to bear same differential below corresponding grades as existed during the period Sept. 1, 1940, to Jan. 31, 1941. Superior grades cannot be sold at a premium without approval of OPA. Special preparation charges in excess of the above prices are banned. Whenever any electric furnace or foundry grades are purchased for open hearth or blast furnace use, prices may not exceed the prices above for the corresponding open hearth grades.

MAXIMUM SHIPPING POINT PRICE—Where shipment is by rail or vessel, or by combination of rail and vessel, the scrap is at its shipping point when placed f.o.b. railroad car or f.a.s. vessel. In such cases, the maximum shipping point prices shall be: (a) For shipping points located within a basing point, the price listed in the table above for the scrap at the basing point in which the shipping point is located, minus the lowest established switching charge for scrap within the basing point and (b) for shipping points located outside the basing point, the price in table above at the most favorable basing point minus the lowest transportation charge by rail or water or combination thereof. Published dock charges prevail, or if unpublished 75c. per ton must be included as part of the deduction.* Shipping by motor vehicle: The scrap is at its shipping point when loaded. For shipping points located within basing points, take price listed in table minus lowest switching charge. If located outside a basing point, the price at the most favorable basing point minus lowest established charge for transporting by common carrier. If no established transportation rate exists, the customary costs are deducted. Published dock charges prevail. If unpublished include 75c.* For exceptions see official order.

*At Memphis deduct 50c.; Great Lakes ports \$1; New England \$1.25.

REMOTE SCRAP: Defined as all grades of scrap listed in table above located in North Dakota, South Dakota, Florida, Montana, Idaho, Wyoming, Nevada, Arizona, New Mexico, Texas, Oklahoma, Oregon and Utah. The delivered price of remote scrap may exceed by more than \$1, but not more than \$5, the price at the basing point nearest the consumer's plant, provided detailed statement under oath is furnished OPA. Where delivered price would exceed by more than \$5 the price at basing point nearest consumer, user must apply to OPA for permission to absorb the additional charges. For exceptions see official order.

UNPREPARED SCRAP: The maximum prices established hereinabove are maximum prices for prepared scrap. For unprepared scrap, maximum prices shall be \$2.50 less than the maximum prices for the corresponding grade or grades of prepared scrap. In no case, however, shall electric furnace and foundry grades be used as the "corresponding grade or grades of prepared scrap." Converter may charge \$2.50 per ton on consumer-owned unprepared remote scrap (see order).

Where scrap is to undergo preparation prior to its arrival at the point of delivery, such scrap is not at its shipping point, as that phrase is defined above, until after preparation has been completed.

CAST IRON BORINGS: (No more than 0.5 per cent oil content; for chemical use in explosive making) add \$5 to price of cast iron borings; for chemical use outside explosives making, add \$3.

UNPREPARED CAST IRON SCRAP—Except for heavy breakable cast, unprepared scrap is given a price ceiling of \$2.50 per ton less than the maximum prices for the corresponding grade of prepared cast iron scrap. Where scrap is to undergo preparation prior to arrival at the point of delivery, such scrap is not considered at shipping point until preparation is completed.

Consumers of cast scrap may pay the shipping point price plus established charge for transporting the scrap to their plants. In the case of deliveries by truck, the cast scrap buyer must obtain from the seller a certification, made out to OPA, of the shipping point, transportation charges and details of the sale.

RAILROAD SCRAP

(Per gross ton, delivered consumers' plants located on line.)

	Scrap Rails					
	No. 1 RR Heavy Melting	Scrap Rails	Rails for Rerolling	3 ft. and Under	2 ft. and Under	18 in. and Under
Cleveland, Cincinnati, Ashland, Portsmouth, Middletown, Canton, Pittsburgh, Sharon, Steubenville, Wheeling, Youngstown, Chicago, Philadelphia, Sparrows Pt., Wilmington, Birmingham, Los Angeles, San Francisco, Buffalo, Detroit, Dayton, Kansas City, Mo., Kokomo, Ind., Seattle, St. Louis.	\$20.50 21.00 19.75 18.00 20.25 18.85 19.00 17.00 19.25 18.50 18.50	\$21.50 22.00 20.75 19.00 21.25 19.85 20.00 18.00 20.25 16.50 19.50	\$23.00 23.50 22.25 20.50 22.75 21.35 21.50 19.50 21.75 18.00 21.00	\$23.50 24.00 22.75 21.00 23.25 21.85 22.00 20.00 22.25 18.50 21.50	\$23.75 24.25 23.00 21.25 23.50 22.10 22.25 20.25 22.50 18.75 21.75	\$24.00 24.50 23.25 21.50 23.75 22.35 22.50 20.50 22.75 19.00 22.00

CAST IRON SCRAP

Other Than Railroad Scrap

	Group A			Group B	Group C
	\$18.00	\$19.00	\$20.00		
No. 1 cupola cast					
No. 1 machinery cast, drop broken, 150 lbs. and under	18.00	19.00	20.00		
Clean auto cast	18.00	19.00	20.00		
Unstripped motor blocks	17.00	18.00	19.00		
Stove Plate	17.00	18.00	19.00		
Heavy Breakable Cast	15.50	16.50	17.50		
Charging box size cast	17.00	18.00	19.00		
Misc. Malleable	20.00	21.00	22.00		

Group A includes the states of Montana, Idaho, Wyoming, Nevada, Utah, Arizona and New Mexico.

Group B includes the states of North Dakota, South Dakota, Nebraska, Colorado, Kansas, Oklahoma, Texas and Florida.

Group C: states not named in A and B; switch district of Kansas City, Kan., Mo.

Price Schedule No. 8 Secondary, Nickel Scrap

TABLE I

Grade	Price, f.o.b. point of shipment	Grade	Price, f.o.b. point of shipment
Pure Nickel Scrap		Monel Metal Scrap	
Containing 98% or more nickel and not more than 1/4% copper.	26c. per lb. of material.	New monel metal clippings.	20c. per lb. of material.
Containing 90% up to 98% nickel.	26c. per lb. of nickel contained; no payment for any other metals contained.	Soldered monel metal sheet.	18c. per lb. of material.
Converter's premium.	2c. per lb. of material.	No. 1 monel castings and turnings.	15c. per lb. of material.
Premium on shipments of 2000 lbs. or more at one time.	1/2c. per lb. of material.	Containing a minimum of 60% nickel, 30% copper, and not more than 3% free iron, clean and dry.	
Ferro-Nickel-Chrome-Iron Scrap		Converter's premium.	2c. per lb. of material.
Containing 20% up to 90% nickel.	26 1/2c. per lb. of nickel contained; 8c. per lb. of chrome contained; no payment for any other metals contained.	Premium on shipments of 20,000 lbs. or more at one time.	1/2c. per lb. of material.
Converter's premium.	1 1/2c. per lb. of material.		
Premium on shipments of 10,000 lbs. or more at one time.	1/2c. per lb. of material.		
Ferro-Nickel-Iron Scrap		Cupro-Nickel Alloy Scrap	
Containing 14% up to 90% nickel and no chrome.	26 1/2c. per lb. of nickel contained; no payment for any other metals contained.	Containing 90% or more combined nickel and copper.	26c. per lb. of nickel contained; 8c. per lb. of copper contained; no payment for any other metals contained.
Converter's premium.	1 1/2c. per lb. of material.	Containing less than 90% combined nickel and copper.	26c. per lb. of nickel contained; no payment for any other metals contained.
Premium on shipments of 10,000 lbs. or more at one time.	1/2c. per lb. of material.	Converter's premium.	2c. per lb. of material.
		Premium on shipments of 20,000 lbs. or more at one time.	1/2c. per lb. of material.

TABLE II—Stainless Steel Scrap

Grade	Sheets, Clippings and Solids ¹	Turnings and Borings ¹
18% Chrome—8% Nickel Type		
Containing 16%-20% chrome and 7%-10% nickel.	\$90 a gross ton. ²	\$60 a gross ton. ²
All other grades or types of chrome-nickel stainless steel scrap.	28c. per lb. of nickel contained; 9 1/2c. per lb. of chrome contained; no payment for any other metals contained.	\$30 a gross ton less than the applicable maximum price for sheets, clippings and solids. ²
Straight-Chrome Type		
Containing 12%-14% chrome.	\$35 a gross ton.	\$30 a gross ton. ²
Containing 14%-18% chrome.	\$40 a gross ton.	\$35 a gross ton. ²
Containing over 18% chrome.	\$40 a gross ton plus 9 1/2c. per lb. for each lb. of chrome in excess of 18%. ²	\$5 a gross ton less than the applicable maximum price for sheets, clippings and solids. ²

¹ Price f.o.b. point of shipment. ² Effective Sept. 8, 1941.

TABLE III

Secondary Monel Ingot and Shot and Secondary Copper-Nickel Shot

Grade	Price, cents per lb., f.o.b. point of shipment	shipped, delivered or carried away in lots of:
Monel ingot	27	
Money shot	27	
Copper-nickel shot containing 48% to 52% nickel and 52% to 48% copper and not more than 1/2% foreign materials	25 1/2	

The maximum prices in Table III apply if the material is sold, shipped, delivered or carried away, in lots of 30,000 lb. or more; if sold and

Cents Per Lb. May Be Added to Such Prices
10,000 up to 30,000 lbs. 1/2
2000 up to 10,000 lbs. 1
1000 up to 2000 lbs. 1 1/2
500 up to 1000 lbs. 2
100 up to 500 lbs. 2 1/2
100 lbs. 3 1/2

TABLE IV—Nickel Steel Scrap

Maximum price of steel scrap (for

sale to a consumer) containing less than 1 per cent nickel is the price of like grade of steel scrap determined under Schedule No. 4, plus \$1 a gross ton for each 1/4 of 1 per cent, computed on the basis of following:

1% up to 1.25% nickel content....	+\$4.
1.25% up to 1.50% nickel content..	+\$5.
1.50% up to 1.75% nickel content..	+\$6.
1.75% up to 2.00% nickel content..	+\$7.
2.00% up to 2.25% nickel content..	+\$8.

Notes: Schedule became effective June 2, 1941.

Grades not listed are to be sold at their normal differentials from the listed grades. Grades should meet standards listed in Circular O issued by the National Association of Wholesale Material Dealers. A manufacturer or fabricator who produces scrap may not qualify for a converter's premium.

Brokers' commissions are allowed as follows (the commission to be added to the maximum price listed herewith): In the case of stainless scrap not more than 5 per cent of the price and with nickel scrap of not more than \$1 a gross ton. The commission must be figured, BEFORE adding the \$10 premium for briquetting.

On shipments of chrome-nickel scrap in less than carload lots, the maximum shall be \$10 a gross ton less than the listed carload price.

A maximum of \$10 a gross ton may be added to the maximum prices listed for stainless, chrome-nickel and straight-chrome scrap when in the form of briquettes (not bundles or bales) which are suitable for direct charging into the furnace without further preparation.

The Chem. Age

Price Schedule No. 6 Iron & Steel

This schedule applies to domestic and export sales, offers to sell, deliveries and transfers by producers. Pig iron is excluded, being covered by a separate schedule (No. 10). Seconds and off-grade iron or steel products are included. Warehouse steel comes under Price Schedule 19 which begins on page 10 of this section. Pig iron appears on page 7.

Maximum Prices

Domestic Delivered Prices

The domestic ceiling delivered price for any iron or steel product having basing point here is the aggregate of:

(1) Basing point base price at governing basing point. "Basing point base price" means prices announced prior to Dec. 31, 1940, or customarily quoted by Carnegie-Illinois Steel Corp., American Steel & Wire Co., National Tube Co., Columbia Steel Co., Tennessee Coal, Iron & Railroad Co. as base prices effective during first quarter of 1941 (or in effect April 16, 1941) and applicable at designated basing points. An individual producer may use his prices in effect during first quarter of 1941 or April 16, 1941, if they do not exceed the above "except to the extent which actually prevailed in the case of such producer during the entire third quarter of 1940." Delivered prices at places like Detroit or Gulf ports which are less than the basing point base price at nearest governing basing point are deemed basing point base prices applicable for delivery at those places provided (in the case of Gulf and Pacific ports) not used to arrive at de-

For mill base prices of steel
See pages 17, 18, 19

livered prices at other destinations; that in case of water transportation charges may be added for war risk insurance; provided further "that this need not apply (a) on shipments to (Continued on Page 9)

PRICE SECTION

Price Schedule No. 10—Pig Iron

(Dollars per gross ton at various basing points)

(Subject to additional charge for delivery within switching limits of a district)

	No. 2 Foundry	Basic	Bessemer	Malleable	Low Phos.
Bethlehem, Pa.	\$25.00	\$24.50	\$26.00	\$25.50	....
Everett, Mass.	25.00	24.50	26.00	25.50	....
Swedeland, Pa.	25.00	24.50	26.00	25.50	....
Steelton, Pa. ....	....	24.50	....	....	\$29.50
Birdsboro, Pa.	25.00	24.50	26.00	25.50	29.50
Sparrows Point, Md.	25.00	24.50	....	....	....
Erie, Pa.	24.00	23.50	25.00	24.50	....
Neville Island, Pa.	24.00	23.50	24.50	24.00	....
Sharpsville, Pa.	24.00	23.50	24.50	24.00	....
Buffalo	24.00	23.00	25.00	24.50	29.50
Chicago	24.00	23.50	24.50	24.00	....
Granite City, Ill.	24.00	23.50	24.50	24.00	....
Cleveland	24.00	23.50	24.50	24.00	....
Hamilton, Ohio	24.00	23.50	....	24.00	....
Toledo, Ohio	24.00	23.50	24.50	24.00	....
Youngstown	24.00	23.50	24.50	24.00	....
Detroit	24.00	23.50	24.50	24.00	....
Duluth	24.50	....	25.00	24.50	....
Birmingham	20.38	19.00	25.00	....	....
Provo, Utah	22.00	....	....	....	....

Pittsburgh Coke & Iron Co. (Sharpsville, Pa., furnace only) and Struthers Iron & Steel Co. are permitted to charge 50c. a ton in excess of above basing point prices for No. 2, basic, bessemer and malleable iron. E. & G. Brooke Iron Co., Birdsboro, Pa., is permitted to charge \$1 in excess of maximums specified in Price Schedule No. 10.

High-Silicon, Silvery Iron

(Base Silicon 6.00 per cent to 6.50 per cent)	
Jackson County, Ohio	\$29.50
Buffalo, New York	30.75

Gray Forge

Valley or Pittsburgh Furnace	\$23.50
------------------------------------	---------

Charcoal

Lake Superior Furnace	\$28.00
Lyles, Tenn., High Phos. Furnace	28.50
Lyles, Tenn., Low Phos. Furnace	33.00

Differentials

Silicon

Base prices subject to an additional charge not to exceed 50c. a ton for each 0.25 per cent silicon content in excess of base (1.75 to 2.25 per cent).

Phosphorus

Base prices subject to a reduction of 38c. a ton for phosphorus content of 0.70 per cent and over.

Manganese

Base prices subject to an additional charge not to exceed 50c. a ton for 50 per cent manganese content in excess of 1 per cent.

Notes: Original schedule became effective June 24, 1941.

Delivered prices are determined by the governing base point price plus freight charges and differentials. The governing base is that which results in the lowest delivered price. While no official ruling has yet been issued, it is understood that OPA has adopted the practice, with dislocated tonnages, of permitting the customer to pay the freight, except for \$1, which the producer is required to absorb. Dislocated tonnages are movements to districts not normally served by a given furnace.

The export ceiling price is the price at the governing basing point, plus differentials, plus export transportation charges from the basing point to the point of delivery. In the case of exports, the governing base may be the established point, or the nearest place of production.

For special kinds or grades of iron for which there are no differentials, the ceiling prices are the basing point prices and the special differentials which were in effect on June 24, 1941.

Price Schedule No. 12 — Brass Mill Scrap

Price per lb., f.o.b. point of shipment
Heavy Scrap Rod Ends Turnings

Grade			
Brass			
Commercial Bronze			
Containing 95% or more copper	9 1/4c.	9 1/4c.	8 3/4c.
Containing minimum of 90% up to 95% copper	9 3/8c.	9 1/8c.	8 3/8c.
Red Brass			
Containing minimum of 80% copper	9 1/8c.	8 7/8c.	8 3/8c.
Best Quality Brass			
Containing minimum of 71% up to 80% copper	8 3/4c.	8 1/2c.	....
Yellow Brass			
Copper			
Nickel Silver			
5% nickel	9 1/4c.	9c.	4 3/4c.
10% nickel	10 1/4c.	9 3/4c.	5 1/2c.
15% nickel	10 3/8c.	10 1/8c.	5 7/8c.

(Quantity Differentials)

Premiums on shipments of:	
15,000 lbs. or more at one time	3/4c. per lb.
40,000 lbs. or more at one time	1c. per lb.

Notes: Original schedule became effective July 21, 1941.

Maximum prices are for scrap which is clean, dry and free from foreign materials and which meets accepted maximum standards of the trade. Scrap

which fails to meet such standards should be sold at normal differentials below the maximums listed here.

Maximum prices apply on shipments in lots of less than 15,000 lb. Premiums for larger quantities are as listed above. A lot of 15,000 lb. for the purpose of this schedule may be made up of any grade of heavy scrap or of any kind or grade of turnings or rod ends or both.

If delivery is made by truck, a shipment in lots of 15,000 or 40,000 lb. or more as the case may be, will be considered to have been made at "one time" if such lots are delivered to the buyer within two days.

Import or customs duty may be added to imported scrap.

The Chem. Age

Price Schedule No. 15

Copper

Grade Price, cents per lb.

Electrolytic, lake, other fire refined copper in wire or ingot bars, delivered Conn. Valley, carlots....	12c.
less than carload (f.o.b. refinery)	12 1/4c.
Casting copper in wire or ingot bars, made by fire refining to a standard of 99.5% pure, over 20,000 lbs., f.o.b. refinery	11 1/4c.
Less than 20,000 lb.	12c.

These maximum base prices must meet either ASTM specification B5-27 for electro or B4-27 for lake copper.

Differentials

For copper of any kind, grade, shape or form, other than those listed above, shall use the differentials (for either adding to or subtracting from the base) which were in effect on Aug. 11, 1941.

For copper, except casting copper, delivered in carload lots at any point other than a Connecticut Valley point, the maximum price shall be the maximum base price as adjusted plus or minus the Aug. 11 delivery differential. The same delivery differentials apply to lake or other fire refined copper, except casting copper, as were applied to electrolytic copper on Aug. 11, 1941.

Quantity Premiums

(On sales of less than carlots by other than refiners or producers)

Quantity	Per lb.
0—499 lb.	2c.
500—999 lb.	1 1/2c.
1000—4999 lb.	1c.
5000—lb. to carload....	3/4c.

Sales in less than carloads by other than producer or refiner may be made f.o.b. shipping point if maximum base price is not exceeded after adjustments for kind or grade or shape and delivery differentials and quantity premiums.

Notes: Original schedule was issued Aug. 12, 1941. Important amendments issued Sept. 2 and Feb. 1, 1942.

Price Schedule No. 17

Pig Tin

Grade*	Price, per lb.
A—99.8%	52c.
B—99.75 to 99.79%	51½c.
C—Cornish Refined	51½c.
D—99 to 99.74%	51½c.
E—Below 99%	51c.

*Grade A must meet "Specifications and Proposals for Supplies No. S-14," issued Dec. 15, 1939, by U. S. Treasury, procurement division, except that this grade need not be free of scrap and remelted metal. Grade B includes tin of 99.8 per cent or higher purity but which does not otherwise meet specifications of Grade A. Price for Grade E applies only to tin content of such metal.

Differentials

1. For lots of less than 5 tons, the following premiums may be added:—

	Cents per lb.
2240 to 11,199 lb. inclusive	1
1000 to 2239 lb. inclusive	1½
500 to 999 lb. inclusive	2½
Under 500 lb.	3

2. For Freight Rates—

Above prices are, in the case of foreign pig tin, ex dock or store, Port of New York, and, in the case of domestic pig tin, ex producer's plant. Maximum prices of foreign tin which is imported through ports of entry other than the Port of New York shall be ex dock or store at the actual port of entry and shall be as much more or as much less than the above prices as the ocean freight from the point of shipment to the actual port of entry exceeds or is less than the ocean freight from such point of shipment to the Port of New York. Foreign tin which is physically present at or is sold for shipment from a point other than the port at which it was entered, and domestic pig tin which is physically present at or is sold for shipment from a point other than the producer's plant, may be sold at prices, f. o. b. such point of physical presence or of shipment, which exceed the above maximum prices by no more than the domestic shipping charges which have actually been paid or must be paid in order to transport such pig tin to such point of physical presence or of shipment.

Note: Original schedule issued Aug. 14, 1941, amended Sept. 19.

—The Iron Age—

Price Schedule No. 20

Copper Scrap

The following is the revised schedule effective Feb. 27, 1942. For previous schedule see IRON AGE, Jan. 1, 1942. Schedule 20 originally was issued Aug. 18, 1941.

Index No. *	F.o.b. Shipping Point Grades	Maximum Per. Lb. (Cents)
1	No. 1 copper wire	\$10.00
1	No. 1 heavy copper	10.00
1	No. 2 copper wire	9.00
1	Mixed heavy copper	9.00

1	Light copper	8.00
2	Bell metal	14.50
2	High grade bronze gears	12.75
2	Babbitt lined brass bushings	12.75
2	Red trolley wheels	10.75
2	Hard red machinery brass	10.00
2	Soft red brass	9.50
2	Soft red brass borings	9.25
2	Alum. bronze (ford) gears	9.00
3	Unlined red car boxes	8.50
3	Lined red car boxes	8.00
4	Cocks and faucets	8.25
2	Red brass breakage; red carburetors (iron screws)	8.00
5	Old rolled brass	8.00
5	Brass pipe	8.00
5	Clean fired rifle shells	8.00
5	Admiralty condenser tubes	7.50
5	Muntz metal tubes	7.00
5	Yellow brass castings	7.25
6	Heavy yellow brass	7.00
6	Cast yellow brass borings	6.75
6	Reflectors	6.75
6	Light brass	6.50
6	Yellow brass breakage	5.50
7	Automobile radiators	7.50

* For the purpose of the quantity premiums all kinds or grades preceded by the same Index No. may be considered as one item.

All commissions and service charges are included in the above. Scrap sold "as is-where is" is reduced in price by the cost of loading.

QUANTITY PREMIUMS

Maximum prices above may be increased by applying one of the following:

1. For sale and shipment at one time of 40,000 lbs. or more containing only one item, add ½c. per lb.

2. For sale and shipment at one time of 40,000 lbs. or more containing not more than three items, add ¼c. per lb.

For the purposes of the above quantity premiums, an item means those grades or kinds of copper or copper alloy scrap which are preceded by the same index number in the table at the start of this price schedule.

No quantity premium may be added if crucible premium (below) has been added.

If the copper content of No. 2 wire or mixed heavy scrap is more or less than 96 per cent, or if the copper content of light scrap is more or less than 92 per cent, the price per lb. shall be increased or decreased at the rate of 0.11775c. for each 1 per cent variation in the copper content with proportionate adjustments for variations of less than 1 per cent.

Prices may be quoted or material invoiced on a delivered price basis. However, if prices are so quoted or material is so invoiced, and the total delivered price exceeds the maximum price fixed by this schedule then (1) the delivery charge shall be shown as a separate item, (2) the price f.o.b. point of shipment (calculated by subtracting the delivery charge from the total delivered price) shall not exceed the maximum price set forth in this schedule and (3) the delivery charge shall not exceed the lowest commercial rate for the most nearly comparable service.

If soft red brass borings and turnings or cast yellow brass borings and turnings contain no more than 2 per cent iron, oil and moisture, the maximum price per pound of material is reduced 1 per cent for each 1 per cent of iron, oil and moisture in excess of 2 per cent.

If red brass breakage and red carburetors with iron screws or yellow

brass breakage contains more than 10 per cent iron, the maximum price per pound of material is reduced 1 per cent for each 1 per cent of iron in excess in 10 per cent.

If automobile radiators contain any iron, the maximum price per pound of material shall be reduced 1 per cent for each 1 per cent of iron.

Lead covered and insulated copper wire or cable, except lead covered cable or wire: Price is determined by multiplying the weight, exclusive of insulation, by the applicable maximum price and deducting from the result not less than 0.15 cent per pound of total weight before removal of insulation. The maximum price of copper content of lead covered cable shall be computed by multiplying the weight, stripped of lead covering, by the applicable maximum price. Price for lead content is in Schedule No. 71.

Mixed lots: If any scrap other than crucible copper or copper alloy scrap is delivered in a mixed lot containing scrap of more than one grade, then (1) the entire lot shall be considered to be of the lowest priced grade or (2) the buyer may sort the scrap and pay for each grade but in such event the maximum price for each of such grades shall be reduced by ¼ cent per lb. If the same maximum price is established for all of the grades in the lot, the second method of settlement must be used. The provisions of this paragraph do not apply if each grade is packed in separate containers or otherwise physically segregated.

Crucible scrap premiums: (No premium allowed unless packed in separate containers or sold and shipped separately.) To the maximum prices a premium of 1 cent per pound may be added. Copper scrap in crucible shape includes only briquetted No. 1 wire, 16 x 16 x 12 in., or cut and bundled in lengths not exceeding 16-in. and in suitable shape for charging.

Crucible copper alloy scrap: (No premium allowed unless packed in separate containers or sold and shipped separately.) To the maximum add ¾ cent per pound for copper alloy scrap in crucible shape, specially prepared for foundry use. This premium may be added only on sales to foundries authorized by WPB to purchase copper alloy scrap. Copper alloy scrap in crucible shape for foundry use includes only heavy, clean scrap of uniform alloy content, in pieces no one dimension of which exceeds 16-in.

No crucible premium may be added to the price of any scrap to which a quantity premium has been added.

Copper wire especially selected and prepared for the use of producers of copper sulphate or of other chemicals, copper segments used by makers of copper powder, or any copper scrap prepared for the special use of steel mills, iron foundries, aluminum smelters or any other special user except producers of copper, brass or bronze castings may upon application be granted a special premium above the maximum prices fixed by this schedule. This premium shall be granted only (1) if the specified material has normally commanded such a premium because of its special uniformity, purity, or preparation, (2) if the material is sold to the type of user for whom it has been especially prepared and (3) if the sale to the specific user has been approved by the OPA.

PRICE SECTION

Price Schedule No. 29

Coke

By-Product Foundry Coke

Effective Oct. 1, 1941; Latest Revise Feb. 4)

TABLE I

Oven Plant	F.o.b. Price in Cars per net ton
Alabama	\$8.50
Chicago	11.50
Ashland, Ky.	10.00
Detroit	11.75
Kearny, N. J.	12.15
Buffalo	11.75
Ironton, Ohio	10.00
Painesville, Ohio	11.25
Portsmouth, Ohio	10.00
Erie, Pa.	11.75
Philadelphia	11.75
Chattanooga, Tenn.	9.00
Fairmont, W. Va.	10.00
Milwaukee	12.25

Maximum delivered price in Connecticut, Rhode Island, Massachusetts and New Hampshire and in that portion of New York, Maine and Vermont wherein lowest established rail transportation charge for by-product foundry coke from Everett, Mass., is \$3.10 per net ton or less, shall be \$13.75 per net ton less 15c. per net ton discount for cash, ten days.

In Maine and Vermont where lowest charge for by-product foundry coke from Everett, Mass., exceeds \$3.10 per net ton, price shall be \$10.65 plus lowest established rail charge from Everett, Mass., to place of delivery.

TABLE II

Maximum Delivered Prices Within Switching Districts

District	Delivered Price
Chicago	\$12.25
Birmingham and Tarrant, Ala.	9.40
St. Louis, Mo., & East St. Louis, Ill.	**12.25
Indianapolis	12.00
Terre Haute, Ind.	12.00
Detroit	12.25
Buffalo	12.50
Cincinnati	11.75
Cleveland	12.30
Erie, Pa.	12.25
Philadelphia	12.38
St. Paul and Minneapolis	14.00

* Maximum delivered price to consumers qualifying under provisions of L. & N. tariff O.F.O. No. 220-C establishing furnace raw material rate of \$0.60 per ton is \$9.10. ** Producers in states other than Missouri, Alabama or Tennessee may charge maximum of \$12.75.

When Shipments are from Alabama:

District	Delivered Price
Chicago	\$12.85
Detroit	12.45
Indianapolis	12.45
Cleveland	12.40
Chattanooga	9.92
Bayonne	16.96
Williamsburg, Ohio	11.95

Delivery within Ohio or certain parts of New York (other than that part of New York for which maximum was established above): the Fairmont, W. Va., oven plant shall not be considered in determining the "governing oven plant," except whenever the shipment is made from the Fairmont oven plant.

Delivery within Kentucky, Indiana, Michigan, Illinois, Iowa, Missouri, Kansas, Nebraska, Minnesota, South Dakota, Montana, Colorado, Utah or Virginia: Whenever place of delivery is located in these states (excepting switching districts above), oven plants shall not be considered in determining the "governing oven plant," except whenever the shipment is made from oven plants at Alabama, Chattanooga, or St. Louis. Provided, however, that maximum delivered price in those areas shall not exceed Alabama f.o.b. oven plant price plus lowest established rail transportation charge from Alabama oven to place of delivery, plus 75c. per net ton.

Delivery within Oklahoma, Nevada, Texas, Arizona, New Mexico or Idaho: When place of delivery is located within these states, the Alabama and Chattanooga oven plants shall not be considered in determining the "governing oven plant," except when shipment is made from such oven plants. Provided, however, that when shipment is made from any other oven plant, the maximum price at such oven plant may not exceed \$10 per net ton.

Delivery within Eastern Pennsylvania,

Southern New Jersey, Delaware and Maryland: When place of delivery is located within eastern Pennsylvania,¹ southern New Jersey,² Delaware or Maryland,³ the maximum delivered price shall be as follows:

When lowest established rail charge for by-product foundry coke from Swedeland, Pa., to place of delivery, is:

Frt. rate (net tons):	Maximum Price per net ton shall be
\$0.68 and less	*\$12.38
0.69 to \$0.96, incl.	12.40
0.97 to 1.66, incl.	12.45
1.67 to 2.24, incl.	12.70
2.25 to 2.50, incl.	12.80
2.51 to 2.85, incl.	12.95
2.86 and over	*10.35

Delivery within Western Pennsylvania or Washington County, Md.: Whenever place of delivery is located in counties of Erie (excepting City of Erie switching district), Crawford, Warren, McKean, Elk, Forest, Venango, and Mercer, the Fairmont, W. Va., oven plant shall not be considered in determining the "governing oven plant," except when shipment is made from such oven plant. Provided, however, that maximum delivered price shall not exceed the Fairmont, W. Va., oven plant price plus lowest established rail charge from Fairmont, W. Va., to the place of delivery, plus 25c. per net ton.

Whenever place of delivery is located in remaining counties of Western Pennsylvania⁴ or Washington County, Md., the Fairmont, W. Va., oven plant shall not be considered in determining "governing oven plant," except when shipment is made from such oven plant. Provided, however, (a) that the maximum price shall not exceed Fairmont, W. Va., oven plant price plus lowest established rail transportation charge for by-product foundry coke to place of delivery, plus 75c. per net ton and (b) when shipment is from ovens at Painesville, Ohio, or Swedeland, Pa., the maximum shall not exceed \$10 per net ton ovens, plus lowest rail charge for by-product foundry coke from such oven to the place of delivery.

On shipments to California, Oregon and Washington, the governing oven plant may be Chicago. Provided, that when shipment is from the oven plants listed in Table I the maximum delivered price may not exceed the f.o.b. oven plant price at such oven plants, plus lowest established rail charge.

Delivery other than by railroad: Maximum is the price as computed above but adjusted to provide the customary differential in effect Sept. 18, 1941, for such means of delivery.

¹ That portion of the state east of a line running approximately north and south through Lawrenceville, Pa. (Tioga County) and Kingsdale, Pa. (Adams County).

² That portion of the state south of a line running from a point immediately north of Phillipsburg, N. J., to a point immediately north of Asbury Park, N. J.

³ Excluding Washington County.

⁴ Delivered.

⁵ F.o.b. oven plant.

⁶ That portion of the state west of a line running approximately north and south through Lawrenceville, Pa. (Tioga County) and Kingsdale, Pa. (Adams County).

Iron and Steel Products

(CONTINUED FROM PAGE 6)

or based upon Gulf or Pacific points if customary means of transportation not used; (b) if shipment is outside usual market area as defined in order, in which cases shipment may be priced as outlined in Part II below.

(2) Applicable extras, except that in no case shall extras be charged for processing, testing, quantity, special quality, etc., unless actually performed and necessary. Extras and deductions on domestic sales are those published or quoted by subsidiaries of U. S. Steel Corp., April 16, 1941, or extras of the individual producer that date. Where any extra may have been so published or quoted but had not been charged, in whole or in part, by a producer for a specific application to a particular group or groups of buyers on April 16, 1941, or during the two years prior thereto, before such published extra may be charged or invoiced by such producer after March 15, 1942, to such particular group or groups of buyers such producer must apply for approval to and receive approval from OPA for the charging of such extra for such application to such particular group or groups of buyers. Any extra approved by OPA may after publication be

(CONTINUED ON PAGE 19)

Price Schedule No. 41

Steel Castings

Schedule effective Nov. 15, 1941, and revised extensively as of Feb. 3, 1942. Steel castings are described as any cast steel object that has been initially cast into the desired shape of the finished product and which contains less than 1.70 per cent carbon, and/or alloys totaling not more than 8 per cent and include miscellaneous castings and steel castings for railroads other than side frames, bolsters, yokes, and couplers of the types and sizes listed in the order.

MAXIMUM PRICES

Prices for steel castings made on or before July 15, 1941: The maximum prices of a producer for these steel castings or for steel castings substantially similar in design and specification are the prices, together with the extras, terms and conditions, which were or would have been charged on July 15, 1941, and which are filed with OPA by Dec. 1, 1941.

Maximum prices for other steel castings: The ceiling price of a producer for steel castings of any description whatever made on or after Feb. 5, 1942, and for which steel castings, or steel casting substantially similar in design and specification, such producer has not filed a price with OPA by Dec. 1, 1941, (1) shall be the price, together with the extras, terms and conditions, listed in the Comprehensive Report under the head of "Schedule Reference" for steel castings of the same design and specification, or substantially similar design and specification, or (2), if substantially different in design and specification from any steel casting listed in the Comprehensive Report, shall be the price which is approved in writing by OPA within six days after Form 141:4 is received by OPA. If selling price is neither approved nor disapproved within six days after receipt of Form 141:4 by OPA, the proposed selling price shall be deemed approved. (Where selling price is not higher than price listed in the Comprehensive Report, or for a casting substantially similar in design and specification, producers are not required to request approval.)

Maximum prices for railroad specialties: Maximum prices, including extras, for railroad specialties delivered to purchaser in base territory* are set in the revised schedule. On maximum prices for railroad specialties, including extras, delivered outside of base territory there may be added charges for freight at rates prevailing at time of delivery with the customary differential allowed to the purchaser, computed by methods used by the producer on Oct. 1, 1941.

On contracts for deliveries six months and longer in the future producers are permitted to quote prices not in excess of fixed ceilings in effect at time of delivery.

* "Base territory" means the states of New York, Pennsylvania, New Jersey, Delaware, Maryland, Virginia, West Virginia, Kentucky, Ohio, Indiana, Illinois and Michigan (southern peninsula only) and also including Bettendorf, Iowa, and St. Charles and St. Louis, Mo.

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Price Schedule No. 43

Second Hand Steel Drums

(Effective Dec. 1, 1941; Latest revise Feb. 2)

Under this schedule a "user" is considered a person who uses a drum as a container for the shipment or storage of goods; "drum" means a steel barrel or drum of a capacity of 14 to 16 gal., inclusive, or 29 to 33 gal., inclusive, or 50 to 55 gal., inclusive; "raw used drum" means a drum which has been emptied but which is not a reconditioned drum; "reconditioned drum" means raw used drum washed and painted; also subjected to other processes

to make it fit for re-use as a container. Painting is unnecessary to make raw used galvanized drums "reconditioned."

TABLE I

Reconditioned drums, delivered to purchaser:

14 to 16 gal., incl.	\$1.45
29 to 33 gal., incl.	1.85
50 to 58 gal., incl.	2.25

(1) Where a reconditioned drum is delivered in excess of 50 miles from the shipping point, the lower of the following alternative charges may be added:

(a) Actual cost of transportation from shipping point.

(b) For each 75 miles or fraction thereof in excess of 50 miles from the shipping point:

14 to 16 gal., incl.	\$0.05
29 to 33 gal., incl.	0.075
50 to 58 gal., incl.	0.10

(2) Where a raw used drum is reconditioned and delivered in California, Washington and Oregon:

14 to 16 gal., incl.	\$0.15
29 to 33 gal., incl.	0.25
50 to 58 gal., incl.	0.50

(3) Where a drum which is lined has been reconditioned so that it is suitable for use as a food container without any further reconditioning process and is sold for use as a food container:

14 to 16 gal., incl.	\$0.15
29 to 33 gal., incl.	0.20
50 to 58 gal., incl.	0.25

TABLE II

Raw drums bought direct from emptier f.o.b. point where emptied:

14 to 16 gal., incl.	\$0.75
29 to 33 gal., incl.	1.00
50 to 58 gal., incl.	1.25

Additional charge if purchased and delivered in California, Washington and Oregon:

14 to 16 gal., incl.	\$0.10
29 to 33 gal., incl.	0.20
50 to 58 gal., incl.	0.40

TABLE III

Raw used drums other than in Table II delivered to purchaser, other than those purchased direct from person who empties it:

14 to 16 gal., incl.	\$1.00
29 to 33 gal., incl.	1.30
50 to 58 gal., incl.	1.60

If picked up by the purchaser, deduct:

14 to 16 gal., incl.	\$0.05
29 to 33 gal., incl.	0.075
50 to 58 gal., incl.	0.10

Additional charge if purchased and either delivered or picked up in California, Washington and Oregon:

14 to 16 gal., incl.	\$0.10
29 to 33 gal., incl.	0.20
50 to 58 gal., incl.	0.40

The Over Age

Price Schedule No. 46

Relaying Rail

Relaying rail means rail (1) which weighed 35 lb. or more per yard when new, (2) which is suitable for relaying and (3) which has been submitted to all reconditioning processes, if any, necessary to render it fit for reuse as rail.

Class I Relaying Rails

Maximum price of relaying rail, weighing 35 lb. or more per yard,

originating from class I railroads and class I switching or terminal companies, except when such rail is sold in track, shall be \$28 per gross ton f.o.b. any station on the selling railroad at the option of the buyer. Except, that when such rail is purchased by dealers or jobbers, such dealers or jobbers may sell such rail at a maximum price of \$30 per gross ton f.o.b. shipping point except as noted in warehouse section below.

Other Rails

Maximums, f.o.b. shipping point for rail other than covered above or in warehouse section below, shall be \$30 per gross ton minus the lowest railroad freight charge for transporting such rail from the shipping point to the basing point nearest freight-wise to the shipping point. Shipping point price need not be less than \$24 per gross ton.

The following cities are designated basing points: Boston, Philadelphia, Buffalo, Pittsburgh, Cleveland, Cincinnati, Detroit, Chicago, Savannah, Ga.; Norfolk, Va.; Minneapolis, St. Louis, Mo.; Kansas City, Birmingham, Houston, Tex.; Los Angeles, San Francisco, Portland Ore., and Seattle, Wash., and Denver, Col.

Warehouse Sales

Maximum price of relaying rail weighing 35 lb. or more per yard, which has been shipped to recognized relaying rail warehouses equipped with machinery for reconditioning, and there unloaded, when sold from such warehouse is \$32 per gross ton f.o.b. warehouse for quantities of one carload and over; \$2 cwt. f.o.b. warehouse for less than carload quantities of 5 tons or more; and \$2.25 cwt. f.o.b. warehouse for quantities less than 5 gross tons.

There may be added to such maximum price, charges for extras, where furnished pursuant to the purchaser's specifications, as follows: (i) 15c. per cwt. for cutting to lengths of 10 to 15 ft., inclusive, together with such drilling as may be necessary; (ii) 20c. per cwt. for cutting to lengths of less than 10 ft. together with such drilling as may be necessary; (iii) 5c. per cwt. for bonding; (iv) 10c. per cwt. for special drilling.

Persons desiring to sell as warehouses must file with OPA a statement indicating that they operate a recognized warehouse equipped with machinery for reconditioning. A storage point or yard, not customarily operated as warehouse, cannot sell as a warehouse. Commission of \$1 per ton to free agents may be added to ceiling.

Notes:

This schedule became effective Dec. 2, 1941; latest revision Feb. 2, 1942. "Shipping point" means on board medium to be used to move material to the buyer.

Every person, other than the ultimate consumer, buying used rail in quantities above 100 gross tons, must file within 15 days a report showing the breakdown of the lot into relaying, rerolling and scrap rails. Every seller making a sale of 25 tons or more of relaying rails must report to OPA within 15 days.

Price Schedule No. 49 Iron and Steel Products— Resale Prices

This schedule, which establishes maximum delivered prices, covers any person who resells iron and steel products, whether as distributor, jobber, dealer, agent, broker, merchant exporter, or any other type of intermediary, but excludes producers covered by schedule No. 6.

Products covered are given in Table I. Schedule became effective Dec. 15, 1941; latest revision Feb. 4, 1942.

(A) Prices in City or Free Delivery Area in Which Seller Is Located

In any city or free delivery area in which the seller is located, the maximum delivered price for any iron or steel products shall be the delivered price which was or would have been charged by the seller on April 16, 1941. Provided, however, that in cities designated in Table II as Listed Cities, the maximum delivered price shall not exceed the published listed prices, as set out in Table II, in effect as of April 16, 1941, for that city or free delivery area.

In listed cities highest published listed price prevail. In unlisted cities, maximum delivered price is result of combination of (a) country prices of any seller located in any listed city; (b) less-than-carload freight from such listed city.

Extras which were customarily charged as of April 16, 1941, may be computed in the maximum delivered price. They must not exceed listed sellers' extras on that date. Extras listed but not customarily charged as of April 16, 1941, shall not be charged. Deductions customarily granted as of April 16, 1941, shall be deducted in computing the maximum delivered price.

(B) Other Delivery Areas

In any place other than a city or free delivery area in which the seller is located, the maximum delivered price is the lowest delivered price that is the result of a combination of (a) country price of any seller located in any Listed City and (b) less-than-carload freight from such Listed City. However, in no case shall the maximum delivered price on a sale for delivery into a Listed City exceed published listed prices, as set out in Table II in effect April 16, 1941.

(C) Sellers Having No Prices

In Listed Cities, the maximum delivered price for persons having no prices April 16, 1941, because of (a) entering business after that date or (b) introduction of a new product since that date shall not exceed the published listed prices set out in Table II, for that city or free delivery area. In Unlisted Cities, the maximum delivered price shall not exceed the lowest delivered price that is the result

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of a combination of (a) country prices of any seller located in any Listed City, and (b) less-than-carload freight from such Listed City.

(D) Export Prices

Export agents are defined as: "any exporter who acts directly for a foreign purchaser in a sale between any seller in the United States and such foreign purchaser, and who does not take title to the goods being exported, or assume a risk of loss because of demurrage, failure to secure shipping space or otherwise."

Export merchants are defined as: "any exporter who acts as a principal, directly to a foreign customer and buys for his own account, and takes title to the goods directly or through an agent, and assumes all risk of loss because of demurrage, failure to secure shipping space, damage to the goods, or otherwise."

Export prices are computed on basis of methods outlined in A, B, C and F, f.o.b. inland carrier or warehouse at port of exportation. If sale is made by export agent, an amount may be added not in excess of 5 per cent of fixed maximum domestic price. If sold by an export merchant, an amount may be added not in excess of 10 per cent of the maximum domestic price. Other export merchants who customarily incur additional foreign costs in excess of those borne by the export merchant may apply for exception.

Maximum export price set forth above in shall include and shall not be increased by reason of any fees, commissions, or expenses, including commissions paid to other intermediaries, whether domestic or foreign, demurrage, storage charges, inspection fees, interest, etc. The maximum price as so computed shall not be increased in any c.i.f. price except to the extent of insurance, ocean freight, and consular charges.

The above margins over domestic maximum prices may be taken only by an export agent or export merchant, and not by both, and shall not be shared by any such person with any domestic seller, broker, agent or other intermediary.

Dislocated Tonnages

In case of shipments by a seller of 150 miles or more, and if shipment is through or into any Listed City, or substantially in the same direction and past any Listed City, or in case of any shipments by a seller of not less than 350 miles, the maximum delivered price for any iron or steel product so shipped shall be country price of the seller plus less-than-carload freight as customarily charged less 15c. per cwt., provided deduction or any part of it does not bring the delivered price below the maximum delivered price in (B) above for the place of delivery as computed in section "Other Delivery Areas."

(E) Pacific Coast and Gulf Ports

Pacific Coast prices are to be computed as described except that on the following products 35c. per cwt. may be added, universal and sheared carbon plates, hot rolled carbon sheets, hot rolled carbon bars and small shapes, galvanized, galvanized, enameling and galvanized corrugated sheets, floor plates, hot rolled carbon strip and structural shapes.

Pending analysis of data to be submitted under provisions of this schedule, on standard pipe, seamless pipe, water well casing, large o. d. pipe, line pipe, wrought iron pipe, oil coun-

try tubular goods, and boiler and other pressure tubes in all cases where the rail and water rates to Pacific Coast ports are referred below these shall be disregarded and the maximum delivered prices on sales of above products at Pacific Coast points shall be the lowest prices resulting from that combination of base prices in effect April 16, 1941, and published all-rail carload freight from that mill basing point which gives the lowest delivered price to destination of customer plus such mark-up as is allowed for each product as set forth below in (i).

Pending analysis of data to be submitted to OPA, sellers located in Gulf Ports shall have a maximum delivered price as established in paragraphs (A), (B), (C), and (F) of this section based on sellers' prices in effect as of April 16, 1941.

Information from Pacific Coast and Gulf Port sellers is required to be filed with OPA on forms 149:1 and 149:2 respectively.

Copies of forms 149:1 and 149:2 may be had upon request by applying to the Office of Price Administration.

"Gulf Ports" means all cities and other places located on or near the Gulf of Mexico in the states of Texas, Louisiana, Mississippi, Alabama, and Florida.

Specific Wire Products

Maximum delivered price of less-than carload quantities of standard wire nails, annealed smooth wire, and galvanized smooth wire, in the city or free delivery area in which the seller is located, shall be the aggregate of: (a) Mill straight carload prices, (after deducting the regular jobber allowance of 15c. per cwt.) (b) carload freight from nearest mill-base to warehouse, and (c) one of the following: for standard wire nails, 50c. per cwt.; for annealed smooth wire, 60c. per cwt.; for galvanized smooth wire, 68c. per cwt.

The maximum delivered price of less-than-carload quantities of standard wire nails, annealed smooth wire and galvanized smooth wire at any other place, is the price as computed above in any city and less-than-carload freight from that city.

Extras charged by jobbers and dealers on merchant wire products shall be the same as regular published mill extras in effect as of April 16, 1941. Deductions customarily granted as of April 16, 1941, shall be deducted in computing the maximum delivered price.

On standard wire nails, annealed smooth wire and galvanized smooth wire, deductions are to be in the same ratio as on April 16, 1941.

Maximum carload delivered prices for all other merchant wire products shall be computed as provided in sections (A), (B), (C) and (F) of this section.

Mixed or straight carloads of merchant wire products are to be sold at maximums not exceeding published mill base prices established by Price Schedule 6. (Regular jobber allowances may be retained.)

While the schedule sets maximums to be charged dealers and quantity purchasers of merchant wire products it does not fix a maximum price for sales by retail dealers to consumers; provided, that sales by any person of nails in quantities over 25 kegs or other merchant wire products in quantities over 2500 lbs. shall be governed by the price provisions of the schedule.

Pipe and Tubular Products

Maximum delivered prices for the following types of iron and steel pipe and tubular products shall be seller's prices as of April 16, 1941, if they do not exceed maximums set below. Standard published mill extras which were charged as of April 16, 1941, may be computed in the maximum delivered price provided that where extras were listed but not customarily charged as of April 16, 1941, they shall not be charged. Deductions customarily granted as of April 16, 1941, shall be deducted in computing the maximum delivered price.

For standard pipe, seamless pipe, water well casing, large o. d. pipe and line pipe: The lowest price resulting from that combination of flat basing card discounts of the National Tube Co. in effect April 16, 1941, and published all-rail carload freight from basing point to destination of customer (except to Pacific Coast points where the rail and water rate is applicable) plus 25 per cent on standard pipe, reamed and drifted pipe and line pipe 6 in. and smaller, both black and galvanized, and 30 per cent on all larger sizes of standard pipe and line pipe, also all sizes of extra strong and double extra strong, both black and galvanized, and all sizes of water well casing and large o. d. pipe.

For wrought iron pipe: The price resulting from combination of resale discounts for sales from distributors' stocks as shown on A. M. Byers Co. card in effect April 16, 1941, and published all-rail carload freight from Pittsburgh to destination of customer (except to Pacific Coast points where the rail and water rate is applicable).

For oil country tubular goods: The lowest price resulting from that combination of basing point prices as published by Oil Well Supply Co., distributor for National Tube Co., in effect on April 16, 1941 (Oil Country Tubular Goods Price List No. 24), and carload freight or transportation charge of destination of customer as computed in National Tube Co. Freight Book No. 1.

For boiler and other pressure tubes: the lowest price resulting from that combination of basing point prices in each quantity bracket of the National Tube Co. Price List for sales to consumer in effect April 16, 1941, and less-than-carload freight from basing point to destination of customer (car-

load freight shall be charged on shipments of 40,000 lb. and over).

Maximum prices for merchant and other tubes must be in same ratio to maximums for seamless as existed April 16, 1941, and shall not exceed the seamless maximum.

For cold drawn seamless and other mechanical tubing: The prices in effect and actually charged as of April 16, 1941, by the exclusive distributors of the National Tube Co., covering all sections of the country, shall be the maximum prices to be charged in areas served by each such distributor.

The schedule does not fix maximums for consumer sales by retail hardware stores or mail order houses in quantities less than five standard lengths.

(F) Tool Steel

Maximum delivered price for tool steel are seller's prices in effect April 16, 1941 (or which would have been charged then), provided they do not exceed for comparable products the price list of Crucible Steel Co. of America effective on April 16, 1941. The locations of warehouses of the Crucible Steel Co. of America are set forth below.

Carload Quantities

Prices in excess of the mill prices provided under Price Schedule No. 6 shall not be charged by any person for: Direct shipments from producers or converters of any quantity of iron or steel products; or shipments of any quantity diverted from delivery to warehouses; or shipments of any quantity not put through the operations of warehousing.

Mixed carloads of 40,000 lb. or more out of warehouse stock, which shipments are made up of a variety of iron and steel items (such as plates, shapes, bars, sheets, special or otherwise, strip; carbon alloy and stainless) of different types, cross-sections, qualities, or classes, shall not be sold at a price in excess of the maximum delivered price for a 500 lb. quantity, minus a discount of not less than \$7 per net ton.

Mixed or straight carloads of merchant wire products are to sell at maximum prices not exceeding the published mill prices established under Price Schedule 6. (Regular jobber allowances given by mills may be retained by seller of such mixed carload.)

Mixed carloads are defined as containing not less than three items of steel of substantial quantity and of different type. (Hot and cold bars or hot and cold sheets are considered different types.)

Mixed or straight carloads of 40,000 lb. or more of pipe and tubular products, including boiler and other pressure tubes and mechanical tubing, shall be sold at maximum delivered prices not to exceed published mill carload prices of such products established by Price Schedule 6; except that the above provision shall not

apply to sales of oil country tubular goods out of distributor's stocks, but shall apply to direct mill shipment.

On shipments of 40,000 lb. or more from seller's stock not falling within paragraphs above, the maximum delivered price shall be the mill price as established under Price Schedule No. 6.

(But on rails these provisions apply to shipments of 59,000 lb. or more)

Except that on presentation to OPA of a certificate that such shipment out of seller's stock has been specifically authorized by WPB a maximum delivered price will be established by OPA.

In case of any shipment of any quantity out of a warehouse stock which has been specifically allocated to the warehouse by the Office of Production Management, and has been there held for reshipment for use in defense repairs or other defense purposes, the maximum delivered price shall be fixed by the OPA upon application for the setting of such maximum delivered price, which application shall contain a sworn statement setting forth the source of such iron or steel products, the Office of Production Management rating or certificate, and the destination to which OPM has directed that shipment be made.

Records on any sales of 40,000 lb. or more of any iron or steel products to any single customer in any calendar month shall be filed with OPA on or before the 15th day of the next succeeding month. This filing shall include a sworn statement of the names and addresses of the buyers, the products and quantities sold, and the price for each quantity.

Seconds, Wasters, Etc.

Maximum delivered price for all off-grade, seconds, wasters and used iron or steel products, after such shearing, cutting, straightening, bending or pickling, as may be necessary, are to be sellers' prices April 16, 1941, if not exceeding maximum delivered price for comparable primes.

General

Delivery and other services of all kinds, credit or other discounts, all freight absorptions (except as otherwise specified in this schedule), all allowances, and all other privileges in effect on April 16, 1941, shall be continued without diminution or extra charge. Brokers, agents, consignees, distributors without stocks, and other persons acting in sales transactions on behalf of owners of iron or steel products other than producers, may continue to charge their customary commissions in effect on April 16, 1941. Except that in such cases where commissions are to be added to the selling price, the result shall not exceed the maximum delivered price as established by this schedule.

In listed cities where several published listed prices for any product or quantity prevail, the highest of such lists is the accepted one for purposes of this order.

When OPA issues prices they will supersede references made in this schedule.

TABLE I

Iron and Steel products, including alloy, covered by this price schedule.

Ingots, blooms, billets, slabs, sheet bars, skelp, tube rounds, muck bar, forging rounds.

Bars and small shapes, new billet and rail steel: Merchant, cold finished—carbon, concrete reinforcing, alloy-hot rolled, cold finished, hoops and baling bands. Tool steel bars (rolled and forged), all plates, sheared and universal, armor plate—forged, cast, rolled and otherwise, shapes including bearing piles and shapes piling and accessories.

Rails: Standard (over 60 lb.), light (under 60 lb.), all other (including girder, and guard). Track materials including: tie plates, tie rods, track spikes—regular cut and screw, splice bars (joint bars, angle bars, rail joints, and flat plates), track bolts, nuts, and ties.

Axles, car wheels, or any combination, rolled or forged, pipe and tube—plain, threaded and coupled (including condenser spiral welded pipe and mechanical tubing); butt-weld, lap-weld, electric-weld, gas-weld, seamless and hammerweld. Black plate, tin plate (hot rolled, cold reduced), sheets and strip (including plain and corrugated, and roofing and siding of all types as hot rolled, cold rolled, galvanized, ternes, enameling, electrical, and all other.

Wire rods, wire—drawn (includes manufacturer's and merchant), wire belting, bale ties and buckle wire, wire nails, staples, tacks, twisted barbed and barb wire, woven wire fencing, chain link fencing, poultry and animal farm netting, woven wire cloth—insect, hardware and all other, wire rope, wire strand, and special cords such as aircraft, wire clothes line, twisted and solid, wire hoops—twisted or welded, communications and power transmission wire, welded or woven wire fabric for reinforcing, and post-and-rail, sign and all other.

TABLE II

Listed cities or free delivery areas in which sellers stock heavy steel line and merchant wire products.

- Baltimore, Scully Steel Products.
- Birmingham, Southern Steel Co., Moore-Handley Co.¹
- Boston, Jos. T. Ryerson & Son, Scully Steel Products, Wheeling Corrugating Co.,¹ Wheelock-Lovejoy & Co.
- Buffalo, Jos. T. Ryerson & Son, Wheeling Corrugating Co.,¹ Wheelock-Lovejoy & Co.
- Chicago, Jos. T. Ryerson & Son, Scully Steel Products, Jones & Laughlin Steel Corp., A. M. Castle & Co., Hibbard Spencer Bartlett & Co.,¹ Wheelock-Lovejoy & Co.
- Cincinnati, Jos. T. Ryerson & Son, Jones & Laughlin Steel Corp., The B. Belmer Co.,¹ Wheelock-Lovejoy & Co.
- Cleveland, Jos. T. Ryerson & Son, Scully Steel Products, Geo. Worthington Co.,¹ Wheelock-Lovejoy & Co.
- Detroit, Jos. T. Ryerson & Son, Jones & Laughlin Steel Corp., Buhl Sons Co.,¹ Wheelock-Lovejoy & Co.
- Houston, Earle M. Jorgensen Co., F. W. Heitman & Co.¹
- Indianapolis, W. J. Holliday Co.
- Los Angeles, A. M. Castle & Co., Earle M. Jorgensen Co., Ducommun Metals & Supply Co.
- Memphis, Jones & Laughlin Steel Corp.
- Milwaukee, Jos. T. Ryerson & Son, Frankfurth Hardware Co.¹
- New Orleans, Jones & Laughlin Steel Corp., Cahn Bros. & Ryder, Inc.¹

(Continued on Page 18)

PRICE SECTION

Price Schedule No. 67 New Machine Tools and Extras MAXIMUM PRICES

On all sales, deliveries and transfers of new machine tools or extras—
Prices higher than the Oct. 1, 1941, list price of the machine tool or extra are prohibited.

If list price was not in effect Oct. 1, 1941, the maximum is the last price at which such a machine tool or extra was sold from Jan. 1, 1941, to Oct. 1, 1941.

If the new machine tool or extra had no list price Oct. 1, 1941, and was not sold within the period from Jan. 1, 1941, to Oct. 1, 1941, the maximum price is the price on Oct. 1, 1941, of the most nearly comparable machine tool or extra produced by the same manufacturer, adjusted to reflect increases or decreases in cost resulting from significant mechanical differences. If the maximum price is to be determined under this method the proposed price and a description of the new machine tool or extra together with an indication of the machine tool or extra deemed by the manufacturer to be most nearly comparable and cost estimates indicating the changes in cost resulting from significant mechanical differences must be submitted on Form 167:1 to OPA not less than 30 days before the date of delivery of such machine tool or extra and the price shall be the maximum unless an objection is made by OPA within 15 days.

Notes: Schedule became effective Jan. 20, 1942.

Contracts with the Army, Navy, Defense Plant Corp., Procurement Division of the Treasury and any other agency of the United States, entered into before the schedule became effective, are exempt. Contracts for delivery nine months in the future may contain provision for price adjustments provided final prices do not exceed OPA maximums on date of delivery.

Makers must file Form 167:2 with OPA prior to Feb. 15, giving Oct. 1, 1941, list prices, and list price on May 6, 1941, of any machines or extras on which the price has been increased, and on Form 167:3 the names and addresses of all dealers in new machine tools to whom sales have been made since Jan. 1, 1941. On or before April 1, 1942, makers must file certified balance sheets as of Dec. 31, 1941, with profit and loss statements.

The OPA Agent

Price Schedule No. 71 Cadmium Primary, Secondary

(Effective Jan. 19, 1942)

Maximum Prices

Type or Shape	Maximum Price, Per Pound, Delivered
Anodes, balls, disks and all other special or patented shapes	95c.
Bars, ingots, pencils, pigs, plates, rods, slabs, sticks, and all other regular straight or flat forms	90c.

The above prices are delivered prices before discounts of any nature have been deducted. Deductions for percentage and character of impurities should be made according to customary trade practices.

The OPA Agent

Price Schedule No. 72 Fuel Oils

(Bunker C and No. 6 Grade, East and Gulf Coasts)

(Effective Jan. 9, 1942)

Maximum differentials for ports on East coast not specified below shall be based on the low quotations for such ports in Platt's Oilgram for Jan. 9, 1942.

Per Bbl.	Per Bbl.
Albany, N. Y. \$1.55	Providence, R. I. \$1.35
New York 1.35	Charleston, S. C. 1.30

Philadelphia	1.35	Savannah, Ga.	1.30
Baltimore	1.35	Jacksonville	1.30
Norfolk, Va.	1.35	Tampa, Fla.	1.25
Portland, Me.	1.35	New Orleans	.85
Boston	1.35	Gulf Coast	.85

The OPA Agent

Price Schedule No. 75 Dead-burned Grain Magnesite

Maintenance Grades, In Bulk

(f.o.b. Chewelah, Wash.)

Per Ton.....\$22.00

Maintenance Grades in Bags or Sacks

Add \$4 per ton to maximum price in bulk.

(A delivered price in excess of the maximum f.o.b. Chewelah price may be charged, consisting of such maximum plus railroad freight from Chewelah to delivery point.)

Notes: Schedule became effective Jan. 28, 1942.

Persons who in one month buy or sell one carload or more must keep for inspection complete and accurate records of each transaction.

The OPA Agent

Price Schedule No. 77 Beehive Furnace Coke

Maximum delivered price of Pennsylvania beehive oven furnace coke is set at

Subsidy Plan Won't Cost Consumer More

• • • While Metals Reserve Co. will pay premium prices, substantially higher than the ceiling prices, to stimulate production of certain metals, the premium price program will not lead to higher prices to the consumer, OPA announced Jan. 13.

\$6 per net ton, f.o.b. Connellsville, Pa., ovens, plus transportation charges as customarily computed.

The schedule became effective Jan. 26, 1942.

Every person making purchases or sales of Pennsylvania beehive coke after Feb. 2, 1942, shall keep for inspection for a period of not less than one year, complete and accurate records of purchases or sales. On or before the 10th day following each calendar quarter thereafter, every person selling beehive coke shall submit affirmation of compliance on Form 177:1.

Schedule Covering Brass and Bronze Ingot

(Effective Feb. 1 after individual ingot makers agreed to observe these maximums, which OPA suggested.)

The prices listed below are carload maximum delivered prices. A premium of 1/4 c. per pound may be added to these prices for less than carload lots.

Ingot Identification Number	Percentage Ranges in Alloy Content								Impurities		Maximum Selling Price Cents Per Pound	Ingot Identification Number
	Copper		Tin		Lead		Zinc		Min.	Max.		
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.		
85-5-5-5 GROUP												
100	83.00	85.55	4.50	5.74	3.00	3.99	1.00	9.50			14.00	100
105	85.00		5.00			5.00	Balance				13.50	105
110*	86.00	88.99	3.00	5.49	4.25	7.00	2.00	7.00			13.25	110
115*	84.00	85.99	4.00	5.49	4.25	7.00	4.00	10.00			13.00	115
120	82.00	83.99	3.00	4.49	6.00	10.00	5.00	10.00			12.75	120
125	77.00	81.99	2.00	4.00	5.00	8.00	6.00	18.00			12.50	125
130	75.00	76.99	1.00	3.00	4.00	10.00	8.00	20.00			12.25	130
88-10-2 GROUP												
200	84.00	88.00	10.75	12.24	0.75	1.25	Max.	0.10	Max.	0.50	18.75	200
205	86.00	90.00	10.00	12.00						0.05	19.75	205
210	81.00	89.00	9.00	10.74	0.00	0.20	1.00	7.00			19.25	210
215	81.00	89.00	9.00	10.74	0.81	1.24	1.00	7.00			17.50	215
220	82.00	88.00	9.00	10.74	1.25	2.74	1.00	5.00			17.25	220
225	83.00	90.00	7.50	8.99	0.21	.40	1.00	7.00			16.25	225
230	83.00	90.00	7.50	8.99	0.81	1.24	1.00	7.00			17.00	230
235	82.00	88.50	7.50	8.99	1.25	2.74	1.00	6.00			16.50	235
240	81.00	87.50	7.50	8.99	2.75	4.24	1.00	6.00			16.00	240
245	84.00	90.00	5.75	7.49	1.00	1.99	1.00	7.00			16.00	245
250	83.50	90.00	5.75	7.49	2.00	3.00	2.00	6.00			15.50	250
255	85.00	90.00	4.50	5.74	1.25	2.99	1.00	9.00			14.50	255
90-10-10 GROUP												
300	77.00	82.00	9.00	10.74	8.50	11.74	Antimony	.25	0.75	1.50	16.00	300
305	67.00	82.00	9.00	10.74	8.50	21.74			0.75	1.50	15.50	305
310	82.00	85.00	7.50	8.99	7.25	8.74			0.75	1.50	14.75	310
315*	80.00	86.00	5.50	7.49	6.00	8.50		4.00	0.75	1.50	14.00	315
320	62.00	77.00	5.75	7.49	16.75	29.74		3.00	0.75	1.50	13.50	320
325	72.00	83.00	4.50	5.74	11.75	21.74		3.00	0.75	1.50	13.00	325
* Ingots to be sold at the price indicated for these ranges of alloy content must have lead at least 1/2 of 1% higher than tin												
YELLOW GROUP												
400	70.00	74.99	.50	1.74	2.00	4.00	Balance				11.50	400
403	65.00	69.99	.50	1.74	2.00	4.00	Balance				11.25	403
405	Any	65.99	.50	1.74	2.00	4.00	Balance				11.00	405
406	Any	65.99	.50	1.00	1.00	1.50	Balance				12.50	406
NICKEL												
410	Any			5.00		10.00	Any	9.00	13.99		14.50	410
411	Any			5.00		10.00	Any	14.00	17.99		16.75	411
412	Any			5.00		10.00	Any	18.00	21.99		18.00	412
413	Any			5.00		10.00	Any	22.00	26.99		19.50	413
ALUMINUM												
415	Any		1.00			.10	Any	8.00	13.00		17.25	415
Tensile Strength												
420	Manganese Bronze						80-85,000		Any		14.00	420
421	Manganese Bronze						85-90,000		Any		15.00	421
422	Manganese Bronze						90-90,000		Any		16.00	422
423	Manganese Bronze						90-100,000		Any		17.00	423
424	Manganese Bronze						100,000 Plus		Any		18.00	424
Additions for Phosphorus in all Groups:												
	Phosphorus	0.05% to 0.10%					Plus-Minus	0		cents per pound		
	Phosphorus	0.20% to 0.49%					Plus	0.25		cents per pound		
	Phosphorus	0.50% and over					Plus	0.50		cents per pound		
Additions for Nickel in all Groups except Yellow:												
	Nickel	Under 1%					Plus-Minus	0		cents per pound		
	Nickel	1% or over, each per cent					Plus	0.25		cents per pound		

Price Schedule No. 69

Primary Lead

(Effective Jan. 15, 1942)

Primary Lead in Carload Lots

Grade or Type	Maximum Price Per Pound (Delivered Buyer's Rail Receiving Point)		
	St. Louis	New York	Other Points
<i>Pigs</i>			
Common lead	6.35¢	6.50¢	Base Price
Corroding Lead...	6.45¢	6.60¢	Base plus .10¢
Chemical lead ...	6.45¢	6.60¢	Base plus .10¢
Copperized lead made from			
(a) Common lead.	6.40¢	6.55¢	Base plus .05¢
(b) Corroding lead	6.50¢	6.65¢	Base plus .15¢
Ingots, linked in- gots, or other special shapes			
Common lead	6.85¢	7.00¢	Base plus .50¢
Corroding lead ..	6.95¢	7.10¢	Base plus .60¢
Chemical lead	6.95¢	7.10¢	Base plus .60¢
Copperized lead made from			
(a) Common lead.	6.90¢	7.05¢	Base plus .55¢
(b) Corroding lead	7.00¢	7.15¢	Base plus .65¢

Less Than Carloads

(1) Sales By Producers of Primary Lead

For Sales in Lots of:	Maximum Price per Lb. (F.o.b. Shipping Point)
	Carload Maximum Price Plus:
20,000 lb. and less than a carload .....	.15¢
10,000 lb. and less than 20,000 lb. ....	.25¢
2,000 lb. and less than 10,000 lb. ....	.40¢
Less than 2,000 lb. ....	.50¢

(2) Sales By Distributors, Dealers, Jobbers
and All Other Persons Except Producers and
Plumbing Supply Houses

For Sales in Lots of:	Maximum Price per Lb. (F.o.b. Shipping Point)
	Carload Maximum Price Plus:
20,000 lb. and less than a carload .....	.65¢
10,000 lb. and less than 20,000 lb. ....	.75¢
2,000 lb. and less than 10,000 lb.	1.00¢
Less than 2,000 lb.	1.50¢

Notes: Table X at bottom of page 15 shows base prices for individual cities. If point of delivery is not listed, use point nearest in distance to the point of delivery. The grades of primary lead in Table I are to be determined in accordance with A.S.T.M. specifications, and if failing to meet these standards should be sold at normal differentials below the established maximum prices. Primary lead in less than carload lots may be sold delivered buyer's receiving plant, provided transportation charge is shown separately. Price f.o.b. point of shipment less transportation must not exceed fixed maximum f.o.b. point of shipment price. No plumbing supply house shall sell, offer to sell, deliver or transfer primary lead at prices above the fixed maximums plus an amount not to exceed the differ-

ence between highest price received by such house in sale of similar quantity of same grade on

Oct. 1, 1941, or on last date previous to that on which such a sale took place.

The Chem Age

Price Schedule No. 70

Lead Scrap, Secondary Lead

TABLE I

Maximum Prices for
Lead Scrap Materials Other Than
Battery Lead Scrap
(Base price means the price listed
in Table X at the point of shipment.
If point is not listed, take nearest
listed point.)

Grade or Type of Lead Scrap Material	Maximum price per lb. (f.o.b. point of shipment)
Soft Lead Scrap	Base price less .55¢
Hard Lead Scrap	Base price less .55¢
Battery Lugs	Base price less .65¢
Lead Content of lead- covered copper cable	Base price less .65¢
Cable lead scrap	Base price less .55¢

These prices are for lead scrap material in clean condition after the free iron, rubble and other foreign materials are removed. Hard lead scrap shall be considered to include any scrap containing not less than 97% lead and antimony combined, and not less than 2% antimony.

Note—Lead scrap may be sold at a price delivered buyer's receiving point. In cases whenever the total delivered price exceeds the maximum f.o.b. point of shipment price, the transportation charge must be shown as a separate item, and the price f.o.b. point of shipment less transportation charge from total delivered price must not exceed maximum f.o.b. shipping point price set in the schedule.

TABLE 2

Secondary Lead

("Base price" is price listed in Table X, at the point of shipment.)

CARLOAD LOTS

Grade or Type	Maximum Price, per pound (f.o.b. point of shipment)
Low-grade secondary pig lead (containing less than 99.73% lead)	Base price less .15¢
Low-grade secondary lead ingots, linked ingots, and other special shapes (containing less than 99.73% lead)	Base price plus .10¢
High-grade secondary pig lead (certified to contain not less than 99.73% lead)	Base price
High-grade secondary lead ingots, linked ingots, and other special shapes (certified to contain not less than 99.73% lead)	Base price plus .50¢

LESS THAN CARLOADS

(a) Sales by Producers of Secondary Lead.

For sales of Secondary Lead in lots of:	Maximum Price, per pound (f.o.b. point of shipment)
20,000 lbs. and less than a carload	Carload price as determined above plus .15¢
10,000 lbs. and less than 20,000 lbs.	Carload price as determined above plus .25¢
2,000 lbs. and less than 10,000 lbs.	Carload price as determined above plus .40¢
Less than 2,000 pounds	Carload price as determined above plus .50¢

(b) Sales by Distributors, Dealers, Jobbers, and all Other Persons except Producers and
plumbing Supply Houses.

For sales of Secondary Lead in lots of:	Maximum Price, per pound (f.o.b. point of shipment)
20,000 lbs. and less than a carload	Carload price as determined above plus .65¢
10,000 lbs. and less than 20,000 lbs.	Carload price as determined above plus .75¢
2,000 lbs. and less than 10,000 lbs.	Carload price as determined above plus 1.00¢
Less than 2,000 pounds	Carload price as determined above plus 1.50¢

TABLE 3

Battery Plates

Single shipments of 8,000 lbs. or more	Maximum price per lb. of gross (wet) weight, f.o.b. point of shipment, determined by multiplying 6.65¢ by the percent of metal content in the plates as determined by sample wet assay; LESS 1.10¢.
Single shipments of less than 8,000 lbs.	Not less than \$3 shall be subtracted from maximum price for entire shipment as determined above.

(Single shipment is all deliveries made to a buyer by any one seller within a period of 96 consecutive hours, excluding Sundays and legal holidays. Sample wet assay is upon receipt of shipment.)

USED STORAGE BATTERIES

Maximum price per cwt., f.o.b. point of shipment is \$2.39

PRICE SECTION

TABLE 4

Primary and Secondary Antimonial Lead

IN CARLOAD LOTS

The maximum price per lb., f.o.b. point of shipment, for any grade or type of antimonial lead sold in pigs shall be equal to 14c. per lb. for the antimony content plus the base price of lead for the remainder. (Base price means price quoted in Table X.)

LESS THAN CARLOAD LOTS

(Maximum Price per Lb., f.o.b. point of Shipment)

For sales in lots of:	
20,000 lbs. and less than a carload	Carload price plus .15c
10,000 lbs. and less than 20,000 lbs.	Carload price plus .25c
2,000 lbs. and less than 10,000 lbs.	Carload price plus .40c
Less than 2,000 lbs.	Carload price plus .50c

(For sales in ingots, billets or other special shapes, there may be added to the maximum prices set forth above a differential of .30c per lb.)

Notes: Schedule became effective Jan. 15, 1942.

Scrap lead, battery lead scrap and battery lead plates, and antimonial lead may be sold delivered buyer's receiving point. If total delivered price exceeds fixed maximum price f.o.b. point of shipment, transportation charge must be shown separately, and the price f.o.b. point of shipment obtained by subtracting the transportation charge from the total delivered price must not exceed the maximum f.o.b. shipping point price.

Smelters who purchase battery lead plates through brokers are permitted to pay brokers a commission above the ceiling price of not more than \$1 a ton gross weight provided the broker meets all the requirements set forth in the schedule.

Smelters or battery manufacturers who purchase used storage batteries (in boxes) may

not pay more than \$2.30 per cwt. of drained boxes f.o.b., point of shipment.

Antimonial lead is defined as any lead-antimony alloy in the form of pigs or special shapes containing not less than 98% lead and antimony combined, not less than 2% antimony, and not more than 3/4% tin.

Every smelter of battery lead plates and every battery manufacturer purchasing battery lead plates, is required to submit each month an affirmation of compliance on Form 170-1.

Every broker and smelter participating in a brokerage contract must submit to OPA under oath a record of such contract.

Toll agreements involving the processing of lead scrap materials or battery lead scrap are prohibited by the schedule unless prior approval has been obtained.

TABLE X

LIST OF BASE PRICES

Established for Price Schedule No. 69 (Primary Lead) and Price Schedule No. 70 (Lead Scrap Materials, Secondary Lead, etc.)

(cents per pound)	(cents per pound)	(cents per pound)	(cents per pound)
Alabama	Iowa	New	Pennsylvania
Birmingham 6.55	Keokuk 6.35	Brunswick 6.50	Allentown 6.50
Fairfield 6.55	Kansas	Passaic 6.50	Ambridge 6.55
California	Topeka 6.35	Pateron 6.50	Crescentville 6.50
Los Angeles 6.50	Kentucky	Perth Amboy 6.50	Donora 6.55
Melrose 6.50	Louisville 6.50	Phillipsburg 6.50	E. Pittsburgh 6.55
Oakland 6.50	Louisiana	Roebing 6.50	Erie 6.50
San Francisco 6.50	Baton Rouge 6.50	Trenton 6.50	Fort
Colorado	New Orleans 6.60	New York	Washington 6.50
Denver 6.50	Maryland	Albany 6.50	Monessen 6.55
Connecticut	Baltimore 6.50	Brooklyn 6.50	New Castle 6.55
Bridgeport 6.55	Massachusetts	Buffalo 6.50	New Brighton 6.50
New Haven 6.55	Boston 6.55	Glendale, L. I. 6.50	Philadelphia 6.50
New London 6.55	Cambridge 6.55	Green Island 6.50	Pittsburgh 6.55
Torrington 6.55	Springfield 6.55	Hastings 6.50	Rankin 6.55
Waterbury 6.55	Worcester 6.55	Long Island City 6.50	Reading 6.50
Waterville 6.55	Michigan	Maspeth, L. I. 6.50	Scranton 6.50
Georgia	Detroit 6.50	New York	Wilkes-Barre 6.50
Atlanta 6.55	Port Huron 6.50	Niagara Falls 6.50	Rhode Island
Idaho	River Rouge 6.50	Richfield 6.50	Bristol 6.55
Silver King 6.50	Minnesota	Springs 6.50	Pawtucket 6.55
Illinois	Duluth 6.40	Rochester 6.50	Phillipsdale 6.55
Aurora 6.40	Minneapolis 6.40	Rome 6.50	Providence 6.55
Chicago 6.40	St. Paul 6.40	Schenectady 6.50	Tennessee
Cicero 6.40	Missouri	Syracuse 6.50	Memphis 6.50
Dixon 6.40	Joplin 6.40	West Albany 6.50	Texas
E. Alton 6.35	Kansas City 6.35	Yonkers 6.50	Dallas 6.50
Evanston 6.40	Neosho 6.50	North Carolina	El Paso 6.50
Granite City 6.40	St. Louis 6.35	Winston Salem 6.50	Houston 6.50
Greenville 6.40	Montana	North Dakota	San Antonio 6.50
Greenwood 6.40	Anaconda 6.50	Fargo 6.50	Virginia
Blvd. 6.40	Black Eagle 6.50	Ohio	Norfolk 6.50
Joliet 6.40	Nebraska	Akron 6.50	Richmond 6.50
Kensington 6.40	Omaha 6.35	Canton 6.50	Washington
Peoria 6.40	New Hampshire	Cincinnati 6.50	Seattle 6.50
Waukegan 6.40	Portsmouth 6.55	Cleveland 6.50	West Virginia
West Pullman 6.10	New Jersey	Delta 6.50	Charleston 6.55
Indiana	Bayonne 6.50	E. Liverpool 6.55	Weirton 6.55
Charlestown 6.50	Bloomfield 6.50	Lorain 6.50	Wheeling 6.55
Gary 6.40	Carney's Point 6.50	Martins Ferry 6.55	Wisconsin
Grasselli 6.40	Dundee 6.50	Niles 6.50	Burlington 6.40
Hammond 6.40	Elizabethtown 6.50	Portsmouth 6.55	Kenosha 6.40
Indianapolis 6.50	Irvington 6.50	Reading 6.50	Milwaukee 6.40
Kokomo 6.50	Jersey City 6.50	Oklahoma	New Glarus 6.40
Marion 6.50	Kearny 6.50	Oklahoma City 6.50	New London 6.40
Muncie 6.50	Newark 6.50		
Whiting 6.40			

Price Schedule No. 82

Wire, Cable and Cable Accessories

TABLE I

Maximum Prices

For all types of wire, cable and cable accessories listed below in Table II, except Weatherproof wire, the prices of which can be determined from prices listed or methods of computation provided in price sheet in effect Oct. 15, 1941, maximum prices are the net prices of the manufacturer on Oct. 15, 1941.

Lead Content—To the prices mentioned above add an amount equal to the number of pounds of lead contained in the wire, cable or accessory, multiplied by \$0.00325.

Weatherproof Wire

Maximum prices are computed by applying Oct. 15 manufacturer's price list to a base price of 17.5c. per pound for solid, soft drawn, weatherproof copper wire and cable, shipped in less than carload lots.

Prices for Unlisted Items

Prices of unlisted items and new products shall be the prices the maker would have charged Oct. 15, 1941, if such prices had been calculated upon costs, procedures and standards on that date. For lead content follow procedure outlined above.

TABLE II

PRODUCTS COVERED

Rods, including hot rolled black or cleaned rods for electrical purposes.

Any copper, copperclad or copper alloy wire or assembly of wires for conducting electricity, including the following types:

Bare wire, all sizes and shapes; metallic coated wire; in stranded or solid form.

Weatherproof Wire including bare wire covered by two or three cotton braids or the equivalent and saturated with weather resistant or heat resistant compound.

Magnet Wire; Non-Metallic Sheathed Cable; Paper Power Cable; Rubber Sheathed Cord and Cable; Rubber Power Cable; Building Wire; Asbestos Insulated Power Cable; Varnished Cambric Insulated Power Cable; Telephone and Telegraph Wire; Telephone, Telegraph or Signal Cable; special purpose communication or signal wire and cable; armored conductors; shipboard cable; flexible cord and cord sets; flexible cords; cord sets; cable accessories including sealing devices, pot-heads; terminals; bells and junction boxes; unit packages for splicing cables of one or more conductors, etc.

Notes: Schedule became effective Jan. 29, 1942.

The schedule provides that no person can make a charge for rolling bars into rods or drawing wire therefrom in excess of the net charge made for similar operations on Oct. 15, 1941, or the latest prior date on which such an operation was performed.

Exemptions: Contracts entered into by a manufacturer prior to Nov. 1, 1941, and contracts with the Army, Navy, Defense Plant Corp. Maritime Commission, Panama Canal or Procurement division of the Treasury or any other agency of the United States prior to Jan. 29, 1942. Contracts for delivery nine months in the future may contain provision for price adjustment, provided final prices after all adjustments do not exceed OPA maximums upon date of delivery.

Manufacturers, rod producers and wire drawers are required to keep records of all transactions. Manufacturers must file price lists and discount sheets by Feb. 20. Data on specifications and costs as of Oct. 15, 1941, must also be filed.

Schedule on Rolled Zinc

Material	Price
Sheet zinc .....13.15c. per lb., f.o.b. mill	
Carloads (36,000 lb.) and over .7% discount	
Ribbon or strip zinc.....12.25c. per lb., f.o.b. mill	
3,000-lb. lots .....1% discount	
6,000-lb. lots .....2% discount	
9,000-lb. lots .....3% discount	
18,000-lb. lots .....4% discount	
Carload lots .....7% discount	
Zinc plates—	
Small (not over 12-in.):	
Lots of 1,000 lb.	
and over .....11c. per lb., f.o.b. mill	
Lots of less than	
1,000 lb. ....12c. per lb., f.o.b. mill	
Large (over 12-in.):	
Lots of 1,000 lb.	
and over .....12c. per lb., f.o.b. mill	
Lots of less than	
1,000 lb. ....13c. per lb., f.o.b. mill	
Zinc engravers' plates—	
Raw .....14.25c. per lb., f.o.b. mill	
Carloads (36,000 lb.) and over—	
7% discount.	
Finished .....21.25c. per lb., delivered	
Zinc lithographers' plates—	
Carloads (36,000 lb.) and over—	
7% discount	
.....15c. per lb., f.o.b. mill	

Notes: No schedule number has been given this listing of maximum prices, nor has the effective date been indicated. The announcement itself (PM1664) was issued Nov. 24, 1941, and said, "A list of maximum prices for rolled zinc sheets, strip and plates, which has been prepared by OPA in the light of the recent 1c. a lb. increase in the price of slab zinc, was made public today by OPA."

The Open Age

Price Schedule No. 79 Carbon Tetrachloride

(Effective Feb. 2, 1942)

(Covers sales in containers of 5-gal. or more)

	Zone 1	Zone 2	Zone 3	Zone 4
(a) Tank Cars.....	Prices Per Pound, Delivered			
	\$.0525	\$.0575	\$.0675	\$.06
(b) Carload Lots	Prices Per Gallon, Delivered			
(i) 50-55 gal. drums	\$.73	\$.80	\$.84	\$.83
(ii) 5 and 10 gal. cans	.97	1.04	1.17	1.07
(c) Less than Carload Lots				
(i) 50-55 gal. drums	.80	.87	1.00	.90
(ii) 5 and 10 gal. cans	1.07	1.14	1.27	1.17

The above prices apply to deliveries in the respective zones, regardless of zone from which shipment is made.

The above prices apply to deliveries in the respective zones, regardless of zone from which shipment is made.

Zone 1—Connecticut, Delaware, Illinois, Indiana, Iowa, Kentucky, Maine, Maryland, Massachusetts, Michigan, Minnesota, Missouri, New Hampshire, New Jersey, New York, North Carolina, Ohio, Pennsylvania, Rhode Island, Tennessee, Vermont, Virginia, West Virginia, Wisconsin, District of Columbia, and the cities of Omaha, Neb., and Kansas City, Kan.

Zone 2—Alabama, Arkansas, Florida, Georgia, Kansas, Louisiana, Mississippi, Nebraska, North Dakota, Oklahoma, South Carolina, South Dakota, except Omaha and Kansas City, Kan.

Zone 3—Colorado, New Mexico, Texas, Wyoming, and that part of Montana east of but not including the following counties: Toole, Pondera, Teton, Lewis and Clark, Broadwater and Gallatin.

Zone 4—Arizona, California, Idaho, Nevada, Oregon, Utah, Washington, and Montana west of and including the counties mentioned above.

No charge for containers may be added to the above prices.

Export sales: Maximum prices for shipment by vessel are the prices above f.a.s. vessel plus 6.5c. per gallon.

Overland shipments for export: see order.

Price Schedule No. 81 Primary Slab Zinc (Scrap Zinc is on page 4)

MAXIMUM BASE PRICES

Grade	Base Price Per Pound
Prime Western	8.25c.
Selected	8.35c.
Brass Special	8.50c.
Intermediate	8.75c.
High Grade	9.25c.
Special High Grade	9.25c.

IN CARLOAD LOTS

Grade	Maximum Price, Per Pound (Delivered, Buyer's Receiving Point)
Prime Western	Base Price plus carload freight from E. St. Louis to buyer's receiving point.
Selected	
Brass Special	
Intermediate	
High Grade	Base Price.
Special High Grade	Base Price.

IN LESS THAN CARLOAD LOTS (Sales by Producers of the Zinc Sold)

For Sales in Lots Of:	Maximum Price Per Pound (F.o.b. Point of Shipment)
	Prime Western Selected Brass Special Intermediate High Grade Special High Grade
20,000 lbs. and less than a carload..	Base price plus .15c. plus carload freight from E. St. Louis to point of shipment.
10,000 lbs. and less than 20,000 lbs.	Base price plus .25c. plus carload freight from E. St. Louis to point of shipment.
2,000 lbs. and less than 10,000 lbs.	Base price plus .40c. plus carload freight from E. St. Louis to point of shipment.
Less than 2,000 lbs.	Base price plus .50c. plus carload freight from E. St. Louis to point of shipment.

(Sales By All Persons Except Producers)

For Sales in Lots Of:	Maximum Price Per Pound (F.o.b. Point of Shipment)
	Prime Western Selected Brass Special Intermediate High Grade Special High Grade
20,000 lbs. and less than a carload..	Base price plus .65c. plus carload freight from E. St. Louis to point of shipment.
10,000 lbs. and less than 20,000 lbs.	Base price plus .75c. plus carload freight from E. St. Louis to point of shipment.
2,000 lbs. and less than 10,000 lbs.	Base price plus 1.00c. plus carload freight from E. St. Louis to point of shipment.
Less than 2,000 lbs.	Base price plus 1.50c. plus carload freight from E. St. Louis to point of shipment.

SPECIFICATIONS

The above grades of primary slab zinc are to be determined in accordance with the following specifications of the American Society for Testing Materials, which provide that the zinc be made from ore or other material by a process of distillation, or by electrolysis, and not produced by "sweating" or remelting of secondary zinc, in six grades as follows:

MAXIMUM IMPURITIES—PER CENT

Grade	Lead	Iron	Cadmium	Total Not Over
Special High Grade ¹	0.007	0.005	0.005	0.017
High Grade ¹	0.07	0.02	0.07	0.16
Intermediate ¹	0.20	0.03	0.50	0.73
Brass Special ¹	0.60	0.03	0.50	1.13
Selected ¹	0.50	0.04	0.75	1.29
Prime Western ¹	1.60	0.08	...	...

¹ It shall be free from aluminum.

Notes: Schedule became effective Jan. 29, 1942.

Sales resulting from production in excess of any quota established by WPB or OPA, and to Metals Reserve Co., are exempt from the schedule.

Sales may be made at prices delivered buyer's receiving point, but transportation charges must be shown separately, and the price f.o.b. point of shipment obtained by subtracting freight charge from total delivered price must not exceed the fixed maximum f.o.b. shipping point price.

The Open Age

Price Schedule No. 78 Oxalic Acid

(Effective Feb. 2, 1942)

	Carloads (\$ per lb.)	Less than Carloads (10,000 lbs. or more) (\$ per lb.)	Less than Carloads (Less than 10,000 lbs.) (\$ per lb.)
Crystalline, barrels or other containers (more than 290 lbs.).....	.11½	.11½	.12½
Crystalline, in kegs, drums, or other containers (100 lbs. to 290 lbs. inclusive).....	.11½	.12	.13
Powdered, in barrels or other containers (more than 290 lbs.).....	.12½	.12½	.13½
Powdered, in kegs, drums, or other containers (100 lbs. to 290 lbs. inclusive).....	.12½	.13	.14

The above maximum prices are f.o.b. the producer's shipping point, with freight equalized at the rate for a shipment of identical quantity over standard routes from producers' shipping points, viz.: Jersey City, N. J.; Niagara Falls, N. Y.; Buffalo, N. Y.; or Chicago Heights, Ill.

Pacific Coast
West Coast
Granite City
Middle town
Bethlehem
Duluth
Birmingham
Gary
Chicago
Buffalo
Cleveland
Youngstown
Pittsburgh
Dollars Per Unit
PRODUCT

OPA Price Ceilings on Principal Steel Products

F.o.b. Basing Point Prices. Gulf and Pacific Coast prices do not apply

if the customary means of transportation (rail and water) is not used

Maximums Under Schedule No. 6

● ● ● Here are ceiling f.o.b. basing point prices of principal steel products covered by OPA Price Schedule No. 6. This schedule, which covers only producers' quotations, became effective April 17, 1941, and froze prices at levels prevailing during first quarter of 1941 (see THE IRON AGE, April 25, 1941, p. 86). It was revised Feb. 5, 1942. See page 6 of this section. Steel from warehouses and jobbers is covered by Price Schedule No. 49.

For maximum export prices see page 19 of this section.

PRODUCT	Dollars Per Unit	Pittsburgh	Youngstown	Cleveland	Buffalo	Chicago	Gary	Birmingham	Duluth	Bethlehem	Middletown	Granite City	Worcester	Pacific Coast
Axles	100 lb.	3.15				3.15		3.15						
Pipe—Seamless	100 ft.	(Separate for Sizes and Types)				(Separate for Sizes and Types)								
Black Plate (Mfr.)	B.B.	4.30				4.30								4.05
Black Plate	100 lb.	3.05				3.05								4.05
Tin Plate	B.B.	5.00				5.00								2.65
Sheets—Hot Rolled—Flat	100 lb.	2.10	2.10	2.10	2.10	2.10	2.10	2.10	(Sparrows Pt.—\$2.10)					3.70
Corrugated		(Separate for Gages)				(Separate for Gages)								4.05
Cold Rolled	100 lb.	3.05	3.05	3.05	3.05	3.05	3.05	3.05	(Sparrows Pt.—\$3.50)					4.95
Galvanized	100 lb.	3.50	3.50	3.50	3.50	3.50	3.50	3.50						3.40
Long Tones	100 lb.	3.80												2.75
Enameling	100 lb.	2.75	2.75	2.75	2.75	2.75	2.75	2.75						3.35
Electrical	100 lb.	2.75	2.75	2.75	2.75	2.75	2.75	2.75						2.70
Strip—Hot Rolled	100 lb.	2.80	2.80	2.80	2.80	2.80	2.80	2.80						2.70
Cold Rolled	100 lb.	2.70	2.70	2.70	2.70	2.70	2.70	2.70						3.30
Alloy	100 lb.	2.95	2.95	2.95	2.95	2.95	2.95	2.95						3.05
Commodity C. R.	100 lb.	2.95	2.95	2.95	2.95	2.95	2.95	2.95						2.55
Wire Rods	100 lb.	2.00	2.00	2.00	2.00	2.00	2.00	2.00						2.50
Mfrs. Wire—Black and Galv.	100 lb.	2.80	2.80	2.80	2.80	2.80	2.80	2.80						3.10
Prem-Spring Wire	100 lb.	3.20	3.20	3.20	3.20	3.20	3.20	3.20						3.60
Merchant Wire—Galv.	100 lb.	3.40	3.40	3.40	3.40	3.40	3.40	3.40						
Annealed	100 lb.	3.05	3.05	3.05	3.05	3.05	3.05	3.05						
Barbed Wire	Speed Col. 0.70													
Nails and Staples	100 lb.	2.95				2.55		2.55						3.05

PRODUCT	Dollars Per Unit	Pittsburgh	Youngstown	Cleveland	Claymont	Buffalo	Chicago	Gary	Birmingham	Duluth	Bethlehem	Coatesville	Sparrows Point	Gulf Port	Lebanon	Weirton	Detroit	Canton	Massillon	Pacific Coast
Ingot Alloy	GT	45.00					45.00													
Ingot—Forging Carbon	GT	36.00	36.00				36.00													
Blooms—Billets—Slabs (Alloy)	GT	54.00	54.00				54.00													
Recoiling (Carbon)	GT	34.00	34.00	34.00			34.00	34.00	34.00	34.00	34.00	34.00	34.00	34.00	34.00	34.00	34.00	34.00	34.00	34.00
Forging (Carbon)	GT	40.00	40.00	40.00			40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00	40.00
Sheet Bars	GT	34.00	34.00	34.00			34.00	34.00	34.00	34.00	34.00	34.00	34.00	34.00	34.00	34.00	34.00	34.00	34.00	34.00
Skelp	100 lb.	1.90	1.90	1.90			1.90	1.90	1.90	1.90	1.90	1.90	1.90	1.90	1.90	1.90	1.90	1.90	1.90	1.90
Bars—Hot Rolled—Carbon	100 lb.	2.15	2.15	2.15			2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15
Alloy	100 lb.	2.70	2.70	2.70			2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70	2.70
Cold Finished—Carbon	100 lb.	2.65	2.65	2.65			2.65	2.65	2.65	2.65	2.65	2.65	2.65	2.65	2.65	2.65	2.65	2.65	2.65	2.65
Alloy	100 lb.	3.35	3.35	3.35			3.35	3.35	3.35	3.35	3.35	3.35	3.35	3.35	3.35	3.35	3.35	3.35	3.35	3.35
Concrete Reinforcing	100 lb.	2.15	2.15	2.15			2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15
Shapes—Small (Bar Size)	100 lb.	2.15	2.15	2.15			2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.15
Structural Angles Zees Tees	100 lb.	2.10	2.10	2.10			2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10
Beams	100 lb.	2.10	2.10	2.10			2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10
Plates—Sheared and Universal	100 lb.	2.10	2.10	2.10			2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10
Alloy	100 lb.	3.50	3.50	3.50			3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
Sheet Piling (New)	100 lb.	2.40	2.40	2.40			2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40	2.40
(Used)	100 lb.	1.60	1.60	1.60			1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60	1.60
(Leased)	100 lb.	1.00	1.00	1.00			1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Rails—Std. (over 60 lb.)	GT	40.00					40.00													
Light (under 60 lb.)	GT	40.00					40.00													
Splice Bars	(Sold F.O.B. Mill of Manufacture)																			
Floor Plates	100 lb.	3.35					3.35													
Tie Plates A. R. E. A.	NT	43.00					43.00													
Track Spikes A. R. E. A.	100 lb.	3.00	3.00				3.00													

(Basing points not observed—Sold F.O.B. Mill of Manufacture)

(Sold F.O.B. Mill of Manufacture)

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CORROSION AND HEAT-RESISTING STEELS (Stainless)

(Per lb. mill base price, f.o.b. Pittsburgh)

Standard Type No.	BASE PRICES—CENTS PER POUND						Standard Type No.
	Bars, Drawn Wire, Structural	Plates	Sheets	Hot Rolled Strip	Cold Rolled Strip	Forging Billets	
301	24	27	34	20 $\frac{1}{2}$	25 $\frac{1}{2}$	20.40	301
302	24	27	34	21 $\frac{1}{2}$	28	20.40	302
302B	24	27	34	21 $\frac{1}{2}$	28	20.40	302B
303	26	29	36	27	33	22.10	303
304	25	29	36	23 $\frac{1}{2}$	30	21.25	304
308	29	34	41	28 $\frac{1}{2}$	35	24.65	308
309	36	40	47	37	47	30.60	309
309S	40	44	51	41	51	34.00	309S
310	49	52	53	48 $\frac{3}{4}$	56	41.65	310
311	49	52	53	48 $\frac{3}{4}$	56	41.65	311
316	40	44	48	40	48	34.00	316
317	50	54	58	50	58	42.50	317
321	29	34	41	29 $\frac{1}{4}$	38	24.65	321
325	26	30	37	26 $\frac{1}{4}$	34	22.10	325
329	36	40	44	36	45	30.60	329
330	49	52	53			41.65	330
347	33	38	45	33	42	28.05	347
403	21 $\frac{1}{2}$	24 $\frac{1}{2}$	29 $\frac{1}{2}$	21 $\frac{1}{4}$	27	18.275	403
405	20	23	28	19 $\frac{3}{4}$	25 $\frac{1}{2}$	17.00	405
406	23	26	31	22 $\frac{3}{4}$	31	19.55	406
410	18 $\frac{1}{2}$	21 $\frac{1}{2}$	26 $\frac{1}{2}$	17	22	15.725	410
414	18 $\frac{1}{2}$	21 $\frac{1}{2}$	26 $\frac{1}{2}$	17	22	15.725	414
416	19	22	27	18 $\frac{1}{4}$	23 $\frac{1}{2}$	16.15	416
420	24	28 $\frac{1}{2}$	33 $\frac{1}{2}$	23 $\frac{3}{4}$	36 $\frac{1}{2}$	20.40	420
420F	24 $\frac{1}{2}$						420F
430	19	22	29	17 $\frac{1}{2}$	22 $\frac{1}{2}$	16.15	430
430F	19 $\frac{1}{2}$	22 $\frac{1}{2}$	29 $\frac{1}{2}$	18 $\frac{3}{4}$	24 $\frac{1}{2}$	16.575	430F
431	19	22	29	17 $\frac{1}{2}$	22 $\frac{1}{2}$	16.15	431
440	24	28 $\frac{1}{2}$	33 $\frac{1}{2}$	23 $\frac{3}{4}$	36 $\frac{1}{2}$	20.40	440
441	24	28 $\frac{1}{2}$	33 $\frac{1}{2}$	23 $\frac{3}{4}$	36 $\frac{1}{2}$	20.40	441
442	22 $\frac{1}{2}$	25 $\frac{1}{2}$	32 $\frac{1}{2}$	24	32	19.125	442
446	27 $\frac{1}{2}$	30 $\frac{1}{2}$	36 $\frac{1}{2}$	35	52	23.375	446
501	8	12	15 $\frac{3}{4}$	12	17		501
502	9	13	16 $\frac{3}{4}$	13	18		502

PRICE SCHEDULE 49

Resale of Steel

(CONTINUED FROM PAGE 12)

New York, Jos. T. Ryerson & Son
Scully Steel Products, Jones & Laughlin
Steel Corp., Wheelock-Lovejoy & Co.
Norfolk, Eagleston-Parke, Inc.
Omaha, Drake-Williams-Mount Co.
Philadelphia, Jos. T. Ryerson & Son
Wheeling Corrugating Co.¹
Pittsburgh, Scully Steel Products, Jones
& Laughlin Steel Corp., C. A. Turner Co.
St. Louis, Jos. T. Ryerson & Son, Scully
Steel Products.
St. Paul, Scully Steel Products.
San Francisco, A. M. Castle & Co.
Earle M. Jorgensen Co.
Seattle, A. M. Castle & Co.

¹ The prices of these firms are published
list prices only as to the merchant who
product line.

TABLE III

Listed cities or free delivery areas in
which Crucible Steel Co. warehouse stocks
of tool steel are located.

Atlanta, Boston, Buffalo, Chicago, Cin-
cinnati, Cleveland, Denver, Detroit, In-
dianapolis, Los Angeles, Milwaukee, New
ark, New York, Philadelphia, Providence
St. Louis, San Francisco, Seattle, Spring-
field, Mass.; New Haven, Conn.

TABLE IV

Listed cities or free delivery areas in
which National Tube Co.'s exclusive dis-
tributors of mechanical tubing are located.

Cambridge, Austin-Hastings Co.
Los Angeles, Ducommun Metals & Sup-
ply Co.
New York, Buffalo, Philadelphia, Pitts-
burgh, A. Frasse & Co., Inc.
Cincinnati, E. K. Morris & Co., Inc.
Chicago, Detroit, Indianapolis, St. Louis
C. A. Roberts Co.
Cleveland, Strong, Carlisle & Hammond
Atlanta, J. M. Tull Metal Supply Co.
Pittsburgh, Williams & Co.

The Iron Age

• • • Other base domestic prices
of steel mills appear on page 17
of this section.

STEEL WAREHOUSE PRICES AT MAJOR CENTERS AS QUOTED IN RECENT ISSUES OF IRON AGE

(Prices are delivered, metropolitan areas, per 100 lb. These prices are not completely official and do not necessarily apply for
located tonnage shipments when the f.o.b. city prices are used in conformance with Schedule 49)

	Pitts- burgh	Chicago	Cleve- land	Phila- delphia	New York	Detroit	Buffalo	Boston	Birm- ingham	St. Louis	St. Paul	Mil- waukee	Los Angeles
Sheets, hot rolled	\$3.35	\$3.25	\$3.35	\$3.75	\$3.58	\$3.43	\$3.25	\$3.71	\$3.45	\$3.39	\$3.50	\$3.38	\$4.65
Sheets, cold rolled		4.10	4.05	4.05	4.60	4.30	4.30	4.68		4.24	4.90	4.23	6.85
Sheets, galvanized	4.65	4.85	4.62	5.00	5.00	4.84	4.75	5.11	4.75	4.99	5.00	4.98	5.85
Strip, hot rolled	3.60	3.60	3.50	3.95	3.96	3.68	3.82	4.06	3.70	3.74	3.85	3.73	5.00
Strip, cold rolled	3.20	3.50	3.20	3.31	3.51	3.40	3.52	3.46		3.61	3.83	3.54	
Plates	3.40	3.55	3.40	3.75	3.76	3.60	3.62	3.85	3.55	3.69	3.80	3.68	4.50
Structural shapes	3.40	3.55	3.58	3.75	3.75	3.65	3.40	3.85	3.55	3.69	3.80	3.68	4.50
Bars, hot rolled	3.35	3.50	3.25	3.85	3.84	3.43	3.35	3.98	3.50	3.64	3.75	3.63	4.50
Bars, cold finished	3.65	3.75	3.75	4.06	4.09	3.80	3.75	4.13	4.43	4.02	4.34	3.88	6.00
Bars, ht. rld. SAE 2300	7.45	7.35	7.55	7.31	7.60	7.67	7.35	7.75		7.72	7.45	7.58	8.55
Bars, ht. rld. SAE 3100	5.75	5.65	5.85	5.86	5.90	5.97	5.65	6.05		6.02	6.00	5.88	8.55
Bars, cd. drn. SAE 2300	8.40	8.40	8.40	8.56	8.84	8.70	8.40	8.88		8.77	8.84	8.63	10.55
Bars, cd. drn. SAE 3100	6.75	6.75	7.75	7.16	7.19	7.05	6.75	7.23		7.12	7.44	6.98	8.55

BASE QUANTITIES: Hot rolled sheets, cold rolled sheets, hot rolled strip, plates, shapes and hot rolled bars, 400 to 1999 lb. galvanized sheets, 150 to 1499 lb.; cold rolled strip, extras apply on all quantities; cold finished bars, 1500 lb. and over; SAE bars, 1000 lb. and over. Excep-
tions: Chicago, galvanized sheets, 500 to 1499 lb.; Philadelphia, galvanized sheets, one to nine bundles, cold rolled sheets, 1000 to 1999 lb.; Detroit,
galvanized sheets, 500 to 1499 lb.; Buffalo, cold rolled sheets, 500 to 1500 lb., galvanized sheets, 450 to 1499 lb., cold rolled strips, 0.0971 in.
thick; Boston, cold rolled and galvanized sheets, 450 to 3749 lb.; Birmingham, hot rolled sheets, strip and bars, plates and shapes, 400 to 3999 lb.
galvanized sheets, 500 to 1499 lb.; St. Louis, cold rolled sheets, 400 to 1499 lb., galvanized sheets, 500 to 1499 lb., cold rolled strip 0.095 in. and
lighter; Milwaukee, cold rolled sheets, 400 to 1499 lb., galvanized sheets, 500 to 1499 lb.; New York, hot rolled sheets, 0 to 1999 lb., cold rolled
sheets, 400 to 1499 lb.; St. Paul, galvanized and cold rolled sheets, any quantity, hot rolled bars, plates, shapes, hot rolled sheets, 400 to 14,999 lb.
Los Angeles, hot rolled sheets, bars, plates, cold rolled sheets, 300 to 1999 lb.; galvanized sheets, 1 to 6 bundles; cold finished bars, 1 to 99 lb.
SAE bars, 100 lb. Extras for size, quality, etc., apply on above quotations. *12 gage and heavier, \$3.43.

MORE MILL BASE PRICES

SHELL STEEL

Basic open hearth shell steel, f.o.b. Pittsburgh and Chicago.

	Per Gross Ton
3 in. to 12 in.	\$52.00
12 in. to 18 in.	54.00
18 in. and over	56.00

Note: The above base prices apply on lots of 1000 tons of a size and section to which are to be added extras for chemical requirements, cutting to length, or quantity.

TOOL STEEL

F.o.b. Pittsburgh, Bethlehem, Syracuse)
Base per Lb.

High speed	67c.
Straight molybdenum	54c.
Tungsten-molybdenum	57½c.
High-carbon-chromium	43c.
Oil hardening	24c.
Special carbon	22c.
Extra carbon	18c.
Regular carbon	14c.

Iron and Steel Products

(CONTINUED FROM PAGE 9)

charged by all producers. Approval may be denied for the charging of any such extra, even if published as of April 16, 1941, to the extent that such extra during the two years prior to April 16, 1941, had been generally ignored in pricing steel for a particular group or groups of buyers so that the failure to charge such extra constituted a customary trade practice in respect to such buyers. Extras when used with reference to export sales means export extras published or quoted by the United States Steel Export Co., by the Steel Export Association, or by the individual producer, as of April 16, 1941; or where extras provided are not applicable, domestic extras.

(3) Transportation charges in effect at time of shipment from governing basing point to delivery point as customarily computed.

Emergency Cases

Notwithstanding the provisions above, if unusual circumstances arise under the war emergency and a shipment of any product is made to a place not within the usual market area of the mill, the emergency basing point may be used and transportation charges calculated for emergency basing point to delivery point. Transportation charges must not exceed actual cost.

Emergency basing point is the established basing point at or nearest place of production or origin of shipment. Usual market area is where product was customarily shipped in comparable quantities in the two years prior to April 16, 1941.

Export Prices

The export ceiling for product having basing point base prices is the aggregate of: (1) the basing point base price at the governing basing point or at the emergency basing point; (2) applicable export extras; (3) export transportation charges in effect at the time of shipment from the governing or emergency basing point to the place of delivery, as customarily computed; **Provided**, That the export price at a particular seaboard point may be the aggregate of (a) the export base price of United States Steel Export Co. f.a.s. seaboard at such point in effect on April 16, 1941, (whether sales are f.a.s. or f.o.b. mill with freight prepaid to seaboard) (b) applicable export extras. In the case of c.i.f. sales adjustments for additional transportation and insurance charges may be made.

Other Price Provisions

For all iron or steel products, such as specialty products, for which there are no basing point base prices and extras or United States Steel Export Co. f.a.s. seaboard prices, ceiling prices shall be prices and extras which were or would have been charged by seller on April 16, 1941, (upon the basis of the prices, discounts, charges, or extras then listed or quoted by the seller) for such iron or steel products. Maximum delivered price for all seconds or off-grade iron or steel products shall not exceed maximum delivered price for comparable prices.

Steel Export Base Prices for Major Products

• • • Following are prices in connection with Price Schedule No. 6, fixing ceilings on iron and steel products. (For domestic steel base price see table on page 17 of this section.) Prices below are base quotations of United States Steel Export Co., f.a.s. principal ports, in effect on April 16, 1941.

	Boston New York Philadelphia Baltimore Norfolk	Charleston Savannah New Orleans Mobile	Galveston Houston	San Francisco Seattle Portland Los Angeles (San Pedro)
PER GROSS TON				
Ingot	\$37.00	\$37.00	\$39.49	\$46.60
Blooms, billets, slabs, sheet bars	42.00	42.00	44.49	51.60
Forging billets	48.00	48.00	50.40	57.60
Wire rods in coils	52.00	52.00	54.49	61.60
Light rails (60 lb. and under)	52.50	52.50	58.01	62.21
Heavy rails (over 60 lb.)	54.15	54.15	59.66	63.86
Girder rails	55.00	58.55	60.25	64.27

PER 100 POUNDS

Angle splice bars for heavy rails	\$3.52	\$3.52	\$3.64½	\$3.92
Tie plates	2.92	2.92	3.04½	3.32
Track spikes	3.25	3.25	3.37½	3.65
Axles	3.38	3.58	3.66	3.78
Skelp	2.20	2.40	2.48	2.60
Filing	2.80	2.80	2.88	3.00
Plates (carbon steel)	2.45	2.45	2.57½	2.85
Structural shapes (standard)	2.45	2.45	2.57½	2.85
Merchant bars and bar mill shapes	2.45	2.45	2.57½	2.85
Concrete bars (new billet)	2.45	2.45	2.57½	2.85
Cold finished carbon steel bars	2.88	3.08	3.16	3.28
H. R. alloy bars	2.79½	3.04	3.04	3.14
Cold finished alloy bars	3.56	3.60	3.69	3.79
H.R. carbon tool steel bars (Tennessee Special)	7.57	7.57	8.37	7.50
Black annealed wire	3.10	3.30	3.38	3.50
Galvanized plain wire	3.60	3.80	3.88	4.00
Galvanized barb wire	3.65	3.85	3.93½	4.07½
Bright nail wire	2.80	3.00	3.08	3.20
Wire nails	2.85	2.85	2.98½	3.29
Galvanized staples (incl. \$1.17 extra for galv.)	3.90	4.12	4.21	4.34
Bright staples (ln. 72c. extra for bright)	3.50	3.72	3.81	3.94

PER BASE BOX

Tin plate 14"x20" 107 lb.-112 sheets. wooden boxes—wire strapped	\$5.35	\$5.35	\$5.49	\$5.80
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PER 100 POUNDS

Hot rolled sheets, 24 B.G. plain bundles (includes 90c. for gauge)	\$3.25	\$3.25	\$3.37½	\$3.65
10 U. S. G. plain bundles	2.35	2.85	2.47½	2.75
Cold rolled sheets, 17 U.S.G. in 2-ton metal crates (includes 15c. for packing)	3.40	3.60	3.68	3.80
Galvanized sheets, 24 B.G. in plain bundles	3.90	3.90	4.02½	4.30
Hot rolled strip	2.40	2.60	2.68	2.80
Cold rolled strip	3.10	3.30	3.38	3.50
American standard pipe, black, T.&C. 1" to 3"	67%	65%	64.2%	63%
American standard pipe, galvanized, T.&C. 1" to 3"	56.2%	54.2%	53.4%	52.2%
American extra strong pipe, black, plain ends 1" to 3"	65.5%	63.5%	62.7%	61.8%
American extra strong pipe, galvanized, plain ends 1" to 3"	55.7%	53.7%	52.9%	51.7%
American double extra strong pipe, black, plain ends 2" to 2½"	53.8%	51.8%	51.0%	49.3%
American double extra strong pipe, galvanized plain ends, 2" to 2½"	43%	41%	40.2%	39%
English gas tubes, black, T.&C. ¾" to 6"	67%*	65¼%*	64.5%*	63.5%*
	65%*	63¼%*	62.5%*	61.5%*
English gas tubes, galvanized, T.&C. ¾" to 6"	59%*	57¼%*	56.5%*	55.5%*
	57%*	55¼%*	54.5%*	53.5%*
English steam tubes, painted, T.&C. ¾" to 6"	62%*	60¼%*	59¼%*	58.5%*
	57%*	55¼%*	54½%*	53.5%*
English steam tubes, galvanized, T.&C. ¾" to 6"	50%*	48¼%*	47½%*	46.5%*
	49%*	47¼%*	46½%*	45.5%*

* South American markets.

** Other markets.

Discounts—American standard pipe—off American list No. 6.

English gas tubes—off English list No. 3, converted 2c. to the penny.

Directory of OPA Officials

HEADQUARTERS—TEMPORARY BUILDING D, WASHINGTON, D. C.

Title	Name	Room No.	Telephone
Administrator	Leon Henderson	46	Def 282, 283
Deputy Administrator	John E. Hamm	52	Def 487, 488
General Counsel	David Ginsburg	426	Def 637, 638
Director of Field Operations	Frank Bane		
Asst. Dir. of Field Operations	E. J. McCormack		

PRICE DIVISION

Director	J. K. Galbraith	258	Def 673, 674
Deputy Director	Robert E. Sessions	252	Def 614-615-441
Assistant Director	Donald H. Wallace	258	Def 234, 235
Steel Price Planning and Policies	Roswell Whitman		

SECTION CHIEFS

Name	Section	Room No.	Telephone
Merle Fainsod	Consumers' Durable Goods	2701	456-62
Karl Borders	Rent	2404	141-81
Joel Dean	Industrial and Agricultural Machinery	238	75
Carl E. Holmquist	Copper and Brass	244	610
Clarence Farrier	Chemicals, Drugs, Paints	226	294
Ben W. Lewis	Rubber and Rubber Products	2442	296
Cyrus McCormick	Autos and Trucks	236	65
Robert C. Macy	Paper and Paper Products	2403	290
B. A. Oppenheim	Textiles, Leather and Apparel	2501	619
George A. Doffing	Fuel	2536	634
Harold B. Howe	Food and Food Products	246	443
Peter A. Stone	Lumber and Building Materials	2638	496-628
John D. Sumner	Zinc, Lead, Tin	242	611
Clair Wilcox	Steel, Iron & Steel Products	2740	602-695

AUTO AND TRUCKS DIVISION

Cyrus McCormick	Price Executive	236	65
J. E. Roberts	Used Car and Dealer Relations Unit	2505	397
E. C. Stier	Parts and Accessories	2507	387

CHEMICALS, DRUGS AND PAINTS DIVISION

Clarence Farrier	Price Executive	226	294
Gerald I. Jordan	Administrative Officer	2401	302
John W. Boyer	Alkali and Compressed Gas Unit	2400	294
John Corwin	Plastics and Resins	2417	302
G. D. Goldberg	Protective Coatings	2417	302
Oregon Hefrick	Solvents	2400	1088
Ribben Zissing (acting)	Coal tar Chemicals	2429	950
B. A. David	Inorganic Acids	2400	302
Frank A. Delgrade	Fine and Medicinal Drugs	2400	950
L. A. LaBrie	Explosives and Other Mine Chemicals	2400	1050

COPPER AND BRASS DIVISION

C. G. Holmquist	Price Executive	244	610
Leo H. Davis	Administrative Officer	245	233
George R. Taylor	Copper and Brass Unit	2602	610
D. H. Van Deusen	Ferro-Alloys	2504	699
C. W. Nichols	Nickel, Nickel Scrap and Stainless Steel Division	2606	698
J. Howard Laghew	Fabricated and Semi-Fabricated	2610	1197

CONSUMERS' DURABLE GOODS DIVISION

Merle Fainsod	Price Executive	2701	456
Edward P. Welles	Administrative Officer	2719	679
E. L. Baker	Furniture Unit	2700	92
S. K. Mand	Floor Equip. and Machy. Unit	2700	1260
Alberts Antolini	Floor Covering and Bedding	2705	391
Arthur Oppenheim	Hardware and Accessories	2705	763
L. R. D. Baker	Electrical Appliances	2705	1089
Maurice Despres	Radios and Batteries	2721	679
Lewis Moore	Cooking, Heating and Utensils		

FOOD AND FOOD PRODUCTS

Harold B. Howe	Price Executive	240	443
FUEL			
George C. Doffing	Price Executive	2630	684
George Coss	Administrative Officer		
George Salmon	Petroleum Unit		
R. H. Collocott	Petroleum Product Sub-Unit	2542	436
Gerald B. Gould	Coal Unit	2533	681

INDUSTRIAL AND AGRICULTURAL MACHINERY

Joel Dean	Price Executive	238	75
Stanley Ofear	Administrative Officer		
Weir Brown	Research and Liaison Unit	2525	1135
Albert Thornbrough	Farm Equip. and Tractors	2500	495
John J. Rodgers	Machine Tools	2313	677
C. L. Christensen	Construction and Extraction Unit	2527	1135
Howard Reilly	Matl. Working and Fab. Machy. Unit	2525	1329
Lloyd Reynolds	Elec., Generating and Power Equip. Unit	2525	1134
John R. Richards	Genl. and Auxil. Machy. and Equip.	2301	1134

LUMBER AND BUILDING MATERIALS

Peter A. Stone	Price Executive	2638	623
L. Seth Schnitman	Administrative Officer	2634	496
E. A. Ledwith	Mechanical Building Equip. Unit	2618	603

PAPER AND PAPER PRODUCTS

Robert M. Macy	Price Executive	2403	290
James Studley	Administrative Officer	2405	93
W. N. Swallow	Wood Pulp	2417	1400
H. P. Christian	Waste Paper	2409	974
J. Strub	Jobbers Unit	2413	1401
J. R. Atwater	Printing Papers	2403	291
C. J. Grant	Writing Papers	2417	1400

RENT

Karl Borders	Price Executive	2404	141
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RUBBER AND RUBBER PRODUCTS

Name	Section	Room No.	Telephone
Ben W. Lewis	Price Executive	2442	296
Jonathan B. Richards	Administrative Officer	248	600
Robert F. Bryan	Assistant Price Executive	2440	385

STEEL, IRON AND STEEL PRODUCTS

Clair Wilcox	Price Executive	2740	605-92
Frank Bane	Administrative Officer	2742	925
F. Russel Widmer	Steel Mill Products Unit	2700	1194
Sam M. Swing	Reusable Products Unit	2731	325
Joseph Mead	Warehouse and Jobbers	2726	496
T. I. Dunn	Bolts, Nuts, Screws and Rivets	2730	325
Herbert Ziegler	Castings Unit	2730	295
P. R. Kerschbaum	Research Unit	2731	295
E. M. Blaisdell	Economic Analysis Unit	2733	325
E. A. France, Jr.	Scrap Unit	2725	425
D. A. Tutein	Pig Iron and Coke Unit	2730	295

TEXTILES, LEATHER AND APPAREL

B. C. Oppenheim	Price Executive	2502	630
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ZINC, LEAD AND TIN

John D. Sumner	Price Executive	247	611
George W. Roddewig	Zinc and Cadmium Unit	242	611
James L. Bruce	.....	242	611
M. Jordan Nathanson	.....	2712	281
Leonard S. Tyson	.....	2708	281
Max L. Levinson	Cadmium Unit	2710	281
Paul Lins	Lead, Tin and Antimony	2704	226
Max Levinson	.....	2710	281
David Malnicoff	.....	2705	281
Kermit Gordon	Secondary Metals and Scrap	2710	226
Seymour Black	.....	2310	47
C. F. Pruefer	Metal Products	2786	226

MINOR METALS AND NON-METALLICS

Paul Lins	Minerals	2704	226
John P. Miller	.....	2708	281
A. P. Woolfson	.....	2708	281
Helen Van Tuyl	.....	2708	281

LEGAL ADVISERS OF DIVISIONS

Iron and Steel	Bernard Fitzgerald	1607	106
Non-Ferrous Metals	Philip Kidd	1804	412 or 413
Machinery	John B. Martin	1614	694

OPA REGIONAL OFFICES AND THE STATES THEY SERVE

Office	Regional Director	Executive Officer	States Served
Chicago 2301 Civic Opera Bldg. 20 North Wacker Drive	John C. Weigel	T. K. Tindale	Illinois Indiana Iowa Minnesota North Dakota South Dakota Wisconsin
Boston 1st National Bank Bldg. 17 Court Street	Kenneth B. Backman	Carl Rogers	Connecticut Maine Massachusetts New Hampshire Rhode Island Vermont
Cleveland 363 Union Commerce Bldg.	Burkitt Williams	Russell Cook	Kentucky Michigan Ohio West Virginia
Atlanta First Federal Bldg. 46 Prior Street, N. E.	Oscar R. Strauss, Jr.	Joseph Short	Alabama Florida Georgia Mississippi North Carolina South Carolina Tennessee Virginia
New York 714 Channin Bldg. 122 E. 42 Street	Sylvan Joseph	.....	New York New Jersey
Dallas Tower Petroleum Bldg. 1907 Elm Street	Max McCullough	William H. Brooks	Louisiana Oklahoma Texas
San Francisco 705 Newhall Bldg. 260 California Street	Harry F. Camp	Frank E. Marsh	Arizona California Nevada Oregon Washington
Kansas City Mutual Inter-state Bldg. 405 E. 13th Street	.....	Leland R. Reid	Arkansas Kansas Missouri Nebraska
Philadelphia 1344 Broad Street	Leo H. McCormick (acting)	.....	Delaware Maryland Pennsylvania
Denver 525 U. S. National Bank Bldg.	Clem Collins	.....	Colorado Idaho Montana New Mexico Utah Wyoming